

Flight, June 22, 1912.



FLIGHT



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A SUNSET FLYING EPISODE AT HENDON.—Hamel on his Blériot.

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EDITORIAL COMMENT.

Another German Menace!

Certain of the daily newspapers a little way back worked themselves into a state of semi-hysteria because Count Zeppelin, after the recent successful trial of his latest dirigible—which, incidentally, has just been placed *hors de combat* by an explosion on the shores of Lake Constance—was telling his countrymen how near Portsmouth is to Hamburg and how easily his huge air-craft could sail over to any of the British naval ports and send wireless information to the Kaiser's fleet of all that is going on inside. It strikes us as being a very good thing for some people's nerves that the noble inventor did not draw a moving picture of the ruin and desolation his wonderful craft would leave behind her when she had dropped a heavy cargo of explosives in Sheerness Dockyard and distributed a few stray bombs among the buildings at Woolwich Arsenal. He might even have gone further, and told how, when the whole of our defences had been laid in ruins and our last battleship sunk, his dirigible could sail back to Hamburg or Heligoland and return with another explosive cargo for the destruction of London! But he evidently has some regard for our nervous systems and, therefore, treats us homœopathically; and perhaps we are in for the second dose in connection with the 350-mile flight, on Tuesday, of the "Victoria Louise" across Holland and along the coast to Hamburg.

As a matter of actual fact, Count Zeppelin told us nothing that we did not know already. We quite realise the capabilities of the air-ship and have no doubt at all that, given the same extremely favourable conditions under which the trial was carried out which has given rise to so much enthusiasm, the Zeppelin craft could cross the North Sea and return with much valuable information—*provided she were not interfered with*. Therein lies the whole *crux* of the matter. Our answer to the implied menace must be to set our own house in order and make it as dangerous an enterprise for the alien seeker after information of strategic value to visit us by air as we believe it would be to come by water.

Our New War Minister.

Even by his political opponents, the appointment of Col. Seely to be Secretary of State for War, which we anticipated in our issue of last week, in succession to Lord Haldane, is spoken of with approval. As the *Daily Telegraph* well puts it, there could hardly have been a better appointment from the ranks of a Government which is singularly lacking in men who take any real interest in the Army. Col. Seely at least does that. He saw active service in South Africa, and he never speaks on Army matters without revealing the fact that he is proud of his army days.

From the point of view of FLIGHT, the appointment is chiefly interesting by reason of the speculation to which it must give rise as to whether or not it will operate to the quickening up of the aerial programme of the War Office. For our own part we have every confidence that it will. There is a great deal of reason for thinking that Lord Haldane was extremely hard to convince upon the question of the utility of the aeroplane, and that he was finally convinced was due, we believe, almost entirely to the influence of the new War Chief, who early realised that aircraft as a decisive factor in the warfare of the future had really arrived. Not only that,

but Col. Seely has always taken a great deal of pains to keep himself posted in all the details and developments of military aviation, so that at least we have the assurance that the future is in the hands of one who knows at first hand of what has been done and is in process of doing. Moreover, as a soldier himself he is better capable of appreciating the professional point of view than the ablest of laymen, and that alone is a valuable asset to the immediate future of army flying. For that reason if for no other, we cannot help the conviction that his advent to the control of the War Office must be all to the good of army aviation.

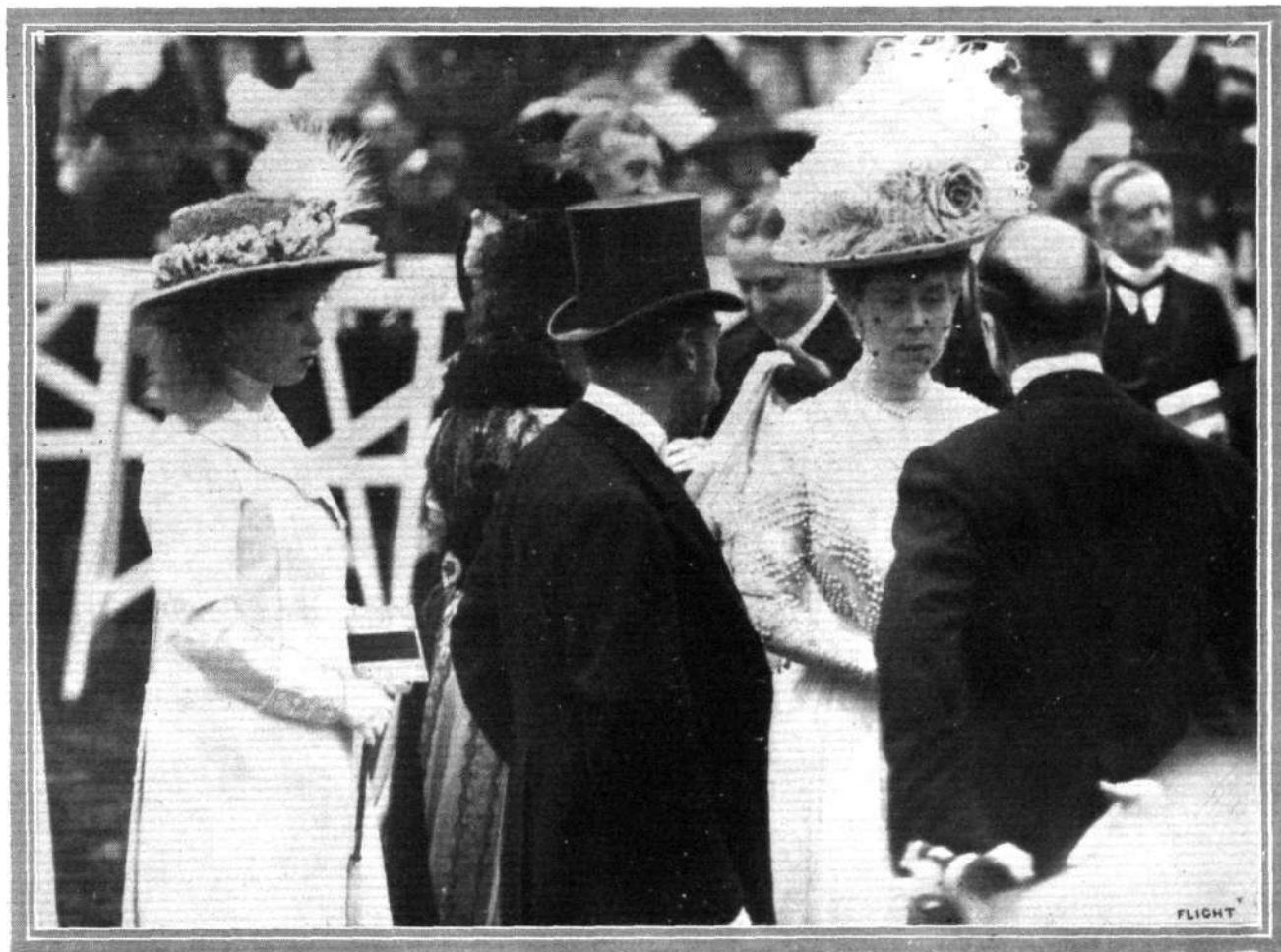
The Future of the Hydro-Aeroplane.

The paper on "Hydro-aeroplanes" which Mr. Holt Thomas read at the Royal Automobile Club before the members of the Aeronautical Society last week, was an exceedingly interesting one from several points of view. It did not pretend to be a paper of deep scientific interest—in fact, the author studiously avoided the technicalities of the subject—and, therefore, it cannot be said to have added much to our knowledge of the problems which have to be grappled with in the evolution of the ideal air-and-water craft. But there was a good deal in it to give rise to very serious thought. The first point that suggests itself is that of the use of the hydro-aeroplane for naval purposes. Mr. Holt Thomas advances the very decided opinion that, after the meeting at Monaco, there is no room for doubt as to the importance of such machines. With that it is impossible not to agree—in fact, the statement has almost become a platitude. Again, with regard to the author's dictum that it is necessary that the naval authorities should at once provide a large fleet of hydro-aeroplanes, using the most efficient machines we have at the moment it is possible to go most of the way with him, for the principle must be admitted that it is essential that our Navy should be absolutely supreme, not only on the seas but in the air. If it be conceded as a principle of modern warfare that the aeroplane, as Mr. Holt Thomas infers, is likely to invest a fleet with markedly additional offensive and defensive powers as compared with a naval force which is without this modern accessory to its fighting strength, then neither pains nor expense must be spared to put us in a position of preponderating strength. At the same time, it may be advisable to proceed with some amount of caution. Not that we would advocate a policy of holding back until our possible rivals have secured a lead over us—even though it might only be a slight one, for we can afford to risk nothing. However, we believe that the Admiralty is sufficiently alive to the necessities of the moment and at that we are content to let it rest for the time being.

Leaving the naval side of the question, the author of the paper spoke of the delights of hydro-aeroplaning as a sport. Undoubtedly it has an immense future before it. In fact, owing to the geographical limitations of these islands we conceive that it is more than possible that the real future of aviation here lies more over the water than the land. We can foresee the time in the not far-distant future when the hydro-aeroplane will be a serious rival of the yacht. But the prophetic rôle is not one of which we are enamoured, so we will refrain from speculations as to the future and simply content ourselves in the meantime with congratulating Mr. Holt Thomas on his most interesting and instructive paper.



THE KING AND AVIATION.—Mr. Gustav Hamel and Capt. Mark Kerr, R.N., immediately after their arrival at Ranelagh last week, when Mr. Hamel flew before the King and Queen. Mr. Hamel and his passenger are seen, before actually alighting from the machine—a Blériot—in which they flew over from Hendon, using it as a “dressing room” by shedding their flying rig in favour of more suitable attire for the occasion.



“Flight” Copyright Photographs.

Their Majesties King George and Queen Mary, accompanied by Princess Mary, at Ranelagh last week, when they witnessed Mr. Gustav Hamel's flying from the grounds.

OUR FRIENDS ABROAD.

JUST recently we have heard from three of our pilot friends, now aviating abroad. These letters, most interesting in that they tell of the manner in which things pertaining to aviation are progressing in other countries, we are pleased to reproduce below.

Mr. C. Compton Paterson, of the African Aviation Syndicate, writing from Kimberley, says:—

"We seem to be jogging along all right here. I made a long cross-country flight, as no doubt you will have noticed, but thought you perhaps would like to have more details, so enclosed cutting will furnish you. (*Précis* appended.—ED.)

"The machine behaved like gold all through, and not even a wire was touched. Some of the landing-places were the very limit too!

"Turner, my mechanic, kept the motor in absolute trim, and I took chances over bad country, feeling comparatively safe.

"I don't know whether I told you, but I had an exciting race with a racing motor cycle round a $1\frac{1}{2}$ -mile track, both from standing start. For six miles my time was exactly 8 minutes, while the motor cycle took 30 seconds longer. Won a nice gold medal for that. The race was very exciting, and they took very good care that I didn't cut inside the railings (kept about 30 feet). Livingston is doing good work for the Company, and in the future there may be something doing."

From the cutting enclosed we have gleaned the following:—The main idea of Paterson was to fly from Kimberley to Klerksdorp and back, a distance of 442 miles. Using the little biplane he had himself constructed at Messrs. Lawton's works at Cricklewood, he started off on Tuesday, April 9th. The countryside being entirely new to him, he followed the railway, passing first over the open workings of the Kimberley mines to Warrenton, some 50 miles off, where the needs of both man and machine were supplied, "Pat" getting his breakfast and the machine getting all the petrol and oil it wanted. Throughout this first section of the trip 2,500 ft. was the maximum level attained. Starting again after breakfast at 9.40, he followed the course of the Vaal River, past Fourteen Streams, on to Christiana, 26 miles further on. Here, owing to the discomfort of flying through the heat eddies set up by the action of the hot sun on the river, he had to descend and wait for the improved conditions that evening would bring. A move was made at five minutes past five, and the distance to Bloemhof, some 33 miles, was covered in 40 minutes.

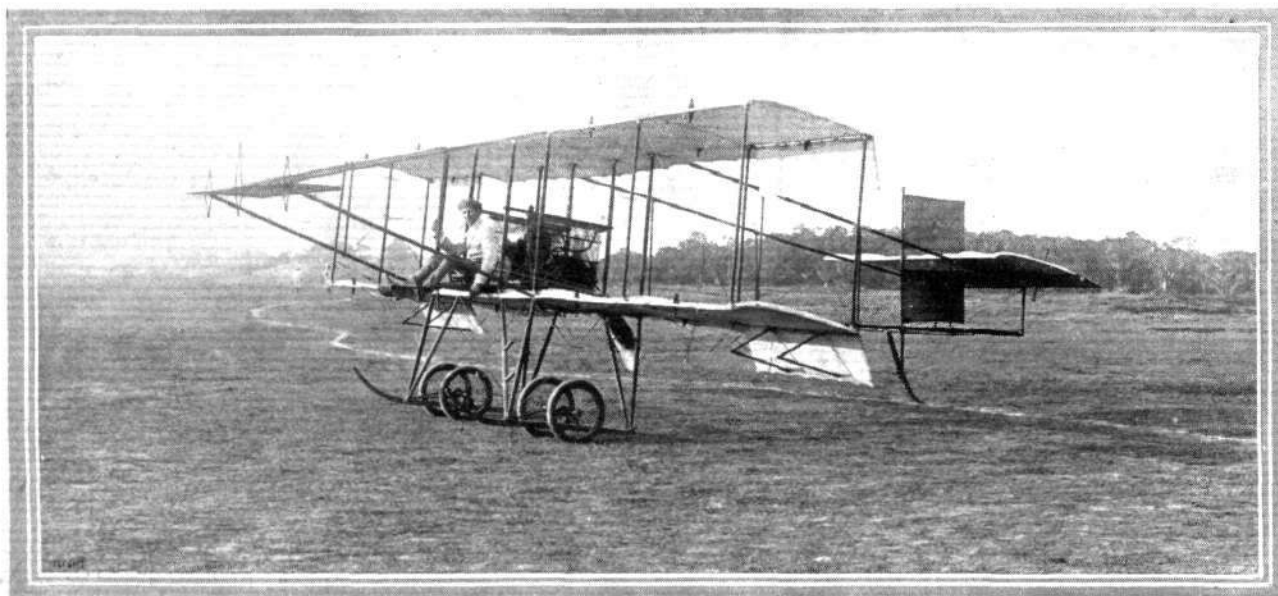
At Bloemhof, Paterson descended, intending to remain down for only a short time. However, so great an interest did the populace—chiefly consisting of diggers, hundreds of whom gathered round the machine—take in this wonderful machine from England that actually flew through the air, that quite a long delay ensued before sufficient ground could be cleared to get a run off. Eventually a start was made. But it was too late in the evening to hope to get to Maquassi. He had, therefore, to come down at Kingswood. Before descending here he circled over the place, selected a likely looking hotel, and came down on an adjoining piece of ground. Next morning early he flew over to Maquassi in 22 mins., and after a short wait, during which he gleaned information as to the direction in which

Klerksdorp lay, he set off again. His information, however, had been rather defective, for he flew for some considerable time without catching a glimpse of the railway line he had been expecting to find. At last he caught sight of the track, and descended near a ganger's cottage, the occupants of which suffered a great fright at his appearance, running back home, pulling down the blinds and generally barricading themselves against the mysterious intruder. At length he was able to console them slightly, and elicited the information that Klerksdorp was some five hours distant. As to the exact mileage they could not inform him, but recommended him to apply at a neighbouring farmhouse. Obtaining information here was not all a bed of roses, for a large Africander bull barred his path, and had to be tactfully eluded before the desired knowledge could be obtained. Yes, Klerksdorp was some eighty miles off. Leaving his aeroplane in a field where he had descended, he took the train to Harrisburg to bring back a further supply of fuel. Klerksdorp was reached at five minutes past six that evening to the immense delight of many of the hundreds of people that had gathered on the show ground to greet him.

It was decided not to start the return journey until the following evening, Thursday, when he flew straight away back to Maquassi, covering 58 miles in 1 hr. 8 mins. Here the night was spent, and on the following morning a move was made to Christiana, passing over Bloemhof on the way. Nothing further could be done that day, for towards evening thunder and lightning and adverse conditions generally sought to work in opposition to the aviator. On the following day, Saturday, things were little better, for it rained all the morning. However, things cleared a bit in the evening, and, although the wind was still very bad indeed, Paterson managed to get to Warrenton after a most hair-raising trip, flying the 26 miles in 25 mins. Sunday was worse still, and Monday's prospects were but little better; but things cleared up a bit towards evening, and although the conditions were threatening, Paterson decided to start. He had not gone far—only about 15 miles—when a severe thunderstorm broke, and he was forced to land again, when only 35 miles from home. On the next day, Tuesday, the weather seemed even more determined to delay the flight, for on each occasion that Paterson visited his machine, the event was accompanied, curiously enough, by a severe rain storm. Wednesday also was a blank day for the same reason. Thursday brought the favourable opportunity, and starting at 6.40 in the morning, he flew back to his tent hangar at Kimberley in 45 minutes. Thus, the trip, a distance of 442 miles, was completed, his flying time being 8 hrs. 39 mins.

Not a single replacement of any kind was made to the machine from the time he left Kimberley till he returned, which is testimony to the excellent work Paterson put into his little biplane, for it must be remembered that for well over a week the machine was exposed to almost every type of weather condition it would be possible to cram into that space of time.

From Rangoon, Burma, comes the following letter from Mr. W. C. England, of the Burma Motor and Engineering Company. Mr. England, it will be remembered, graduated at the Grahame-



Mr. W. C. England on his E.N.V.-engined Howard Wright biplane at Rangoon, Burma, where he has been introducing aviation at the Rangoon Golf Club at Mingaladon.

White School at Hendon, and took back to Rangoon with him the Howard Wright biplane fitted with a 40-h.p. E.N.V. engine. He says, "I might say I have experienced considerable difficulty in getting the engine to pull up to its maximum power owing to the difference in carburation in this hot country, and not until I received a new carburettor from England which could be adjusted could I get the machine to rise off the ground. I find that the air is much lighter here than in England, and you require to obtain a far greater speed in order to reach a decent altitude."

"A day or two ago I had the machine out at Mingaladon on the golf club grounds there, and made a short flight. We did better, however, on the following Saturday morning. We had her out of the shed soon after half past five, and made several flights. On Sunday morning, too, we had her out again for trial, there being a number of the members of the Rangoon Golf Club and their friends present. Returning to the shed I had the misfortune to run into a rather large ant heap and snap a wire, which caught in the propeller and pulled the right half of the landing chassis out by the roots. However, I have spares, and I don't think it will take very long to repair the damage."

"On one of my trials I reached 150 ft., which is the best I have been able to get on this machine up to the present, it being a Howard Wright biplane fitted with only a 40-h.p. E.N.V. engine. Another great drawback I have had to contend with is, being unable to get a suitable aerodrome, the ground being so hard in the dry weather, and in the wet weather it is so cut up by the cattle. You must remember we get six months' continuous rain, and the ground gets very soft that the cattle cut it up terribly. Then six months' sun comes along and bakes it, so that it is just like running over a brick field."

"This year's rain is just about to start, and I intend, near the end of the wet season, to roll the ground in order to get a good surface for next year. I am just waiting to see the results of this trial flight, and if the public come forward, as I expect them to, I will try and get out a more powerful machine for passenger carrying and cross-country flights."

"I am enclosing a photograph of my machine on the ground."

"I may say that some time ago I read in your columns of a gentleman from India stating that he has had a lot of trouble with

ants in eating away the wood. This I have not had happen here in Burma, my machine having stood in my hangar for over six months now, and there is absolutely no sign of their interference, bar that anthill I came to grief over."

"This machine was absolutely dismantled at the Hendon aerodrome before I left England, taking all the planes into sections, also stripping off all the old canvas. I have completely reconstructed it here, and instead of re-covering it with single canvas with pockets for the ribs, I covered it double. This, I think, has greatly improved the machine's flying and stability, as I can assure you I never sat in a more comfortable machine. It rises from the ground absolutely without the slightest use of the *ailerons*."

Mr. Frank Champion, who has done a great deal of flying on a Gnome-Blériot out in California, and who was accidentally shot in the leg while leaving the Domingaly Aerodrome not long since, writes as follows:—

"Since I last wrote I had another operation on my leg. They cut it open and chiselled off the upper end of the bone, which kept me in bed for three weeks. I am now in bed again, this time for only four days, for the doctors did a bit more skin-grafting last Sunday morning. It has now been four months since I was shot, and you can imagine it seems more like a year to me. I suppose you have heard quite a number of reports about the fatal accident that happened to poor Galbraith Rodgers out here at Long Beach. I saw the whole thing happen, and to me it seemed that the direct cause was that he did much too steep a *vol plane* with the wind behind him. It seemed to get under the tail and prevent him from flattening the machine out. I reckon on entering the American Circuit race this year. Would enter the Gordon-Bennett, but guess the 50-h.p. Gnome-Blériot would not stand much of a chance, even with racing wings. I can get a 40-h.p. water-cooled motor given to me if I can build a monoplane that it will fly. It seems quite a good engine, and flies the Curtiss type biplane all over the woods. They, however, want to get one in a monoplane. It is, as I said, water-cooled, and looks very much like a 35-h.p. Green. I believe she would fly an Anzani-Blériot good. She gives about 290 to 300 lbs. pull. Well, I guess I'll close."

[A further letter from Mr. Champion is dealt with on page 562.]

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A snap of the Hill of Oaks aviation sheds at Lake Windermere, taken from Mr. E. E. Wakefield's hydro-aeroplane "Waterhen" when in flight.

HYDRO-AEROPLANES.

By E. HOLT THOMAS.

THE last meeting of the Aeronautical Society for this session was held on Wednesday, June 12th, by courtesy of the R.A.C. Committee, at the Royal Automobile Club, Lord Saye and Sele took the chair, and Mr. E. Holt Thomas delivered a most interesting lecture on Hydro-Aeroplanes, a subject that represents quite a new phase of aviation, about which one and all are naturally only too anxious to be informed. It is impossible for us to do justice to the interest that this event itself aroused, because the lecturer very thoughtfully provided his audience with a wonderfully good Pathé cinematograph entertainment, which illustrated in a few minutes what no written text can ever convey. Nevertheless, the author's paper, together with the pictures that were shown merely as lantern slides, will be read with interest by all who were unable to be present. Mr. Holt Thomas said:—

"It has always seemed to me, and my convictions are somewhat confirmed by the competitions at Monte Carlo, that too little attention has been paid to the flying part of the hydro-aeroplane machine, *i.e.*, to the planes of the waterplane. What I mean is this, no matter how good the floats may be, an efficient waterplane can only be evolved by using an efficient aeroplane. The floats should be regarded as a landing chassis and a landing chassis only. The problem of getting off the water is a problem, but it is one that is tremendously assisted by efficient planes. I have known Monsieur Fabre for a very long time, and we have often discussed his early experiments at Marseilles. Now he was quite convinced that he must evolve an extraordinary machine to get over the holding power of the water; whilst I was convinced, and I think events prove me right, that if he had taken a very efficient biplane and attached floats to it, he would have flown successfully two years ago. I do not intend to suggest what may be the requirements of the waterplane in the future, but I should like first to mention what in my opinion are the things most worth seeking by those intending to construct hydro-aeroplanes *now*. They are:—1. The most efficient flying machine; 2. Large surface; 3. Variable speed; 4. The most efficient floats; 5. The most efficient position of these floats.

"At Monte Carlo, the Henry and Maurice Farman machines were a long way ahead in marks of any others, and I attribute their success, to a very large extent, to the well-known efficiency of the flying machine itself. Light weight in this matter is very important, a waterplane weighing half a ton must in many ways be better than one weighing a ton. Not only does it mean that the machine is carrying 1,000 lbs. less of useless weight, but it means that the descent in a rough sea is much lighter, and the shock much less. It means, too, that the pilot will be able to get out of difficulties to which the inefficient machine is likely to succumb, and it means that the efficient plane can carry 1,000 lbs. of useful load in the shape of passengers, guns, or bombs.

"I do not mean, of course, that weight must be cut down ruthlessly, but that the usual lines of skilful aeroplane construction must be followed, *viz.*, those that give the greatest ratio of strength to weight.

"Flying over water is easier than flying over land. I flew with Henry Farman on his first flight on a water machine. Naturally, skilful pilot as he is, he had no difficulty in handling it, but his first remark to me on alighting was, 'Did you notice how little the wind affected us?' This was the more remarkable, because we were flying in a wind that would have been considered high on land, but the machine was perfectly steady. We must, however, remember that in the land machine, whether the landing ground is good, bad, or indifferent, it at any rate keeps *still*. The sea does not. You are going to use a landing ground (to use an Irishism) which *rushes* at you; which strikes your floats immediately they come within reach extremely hard blows, and if you rush, too, you are distinctly going to get the worst of it. I believe, therefore, it is almost a necessity not to rush at it, but to go slow, which puts point to my advocacy of large surface and variable speed.

"I attribute a great deal of the Farman's success to the variable speed of their machines, which is guaranteed to provide a 50 per cent. variation. That is to say, they will fly say at 90 kiloms. or 45 kiloms. This gives an enormous pull in the hydro-aeroplane, a pull which cannot be over estimated.

"Important as a slow landing is on land, and especially in England, it is much more important on water, where your own skill may be powerless to avoid the blow of a wave.

"With a large surface and variable speed, one has also the advantage of carrying several passengers, almost a necessity in the waterplane. Even in the first few days at Monte Carlo, the word 'cruise' was substituted for the word 'flight.' Flying by waterplane is cruising, and what is wanted now is the aerial cruiser.

"The question of an efficient float is, of course, a difficult matter to deal with, and that is why I lay so much stress on having a really

good aeroplane for the early experiments. It is quite possible that our early experimenters did have efficient floats, but they were without the power to lift them. On this point I am afraid that I cannot say much that will be of use, but the photographs of the machines used may be interesting.

"It may encourage constructors if I mention that Henry Farman had not tried his machine at all on the water before despatching it to Monaco. I asked him if he had tried it much. 'Yes' he replied, 'but only on land.' What he did was to try a great many models towed in a mill stream, and finally adopted what he considered the best.

"In the floats, the art of aeroplane construction, *viz.*, strength for weight again predominates. The shock that the float has to meet when it comes in contact with a wave is very severe. It *must* be strong and it *must* be light. Here a combination of steel and wood is useful. Aluminium, I think, is practically useless as a covering, because it is so easily dented by the waves. The floats should be strongly supported both longitudinally and laterally with wooden girders, from which all useless weight is cut away, and then braced at important points with steel brackets. Having the frame properly designed, and strongly constituted, the float is covered with mahogany, or cedar, which is first treated to resist the sea water.

"The hydro-aeroplane is so new, that it is difficult to express an opinion as to design in float, but Henry Farman's float seemed in the opinion of most people, to be, 'sweeter' than others. When I say 'sweeter' I mean that they did not appear to hug the water, when they should have left it, and in alighting appeared to descend very lightly, without much displacement of water. At the moment, I prefer two floats to one only. It appears necessary with a simple float to fix buoys to the end of the planes, and I think that one float has a tendency to turn on alighting. This, however, is a matter of experiment. I may say that I do not think a rear-supporting float is necessary, although a small one should be attached to the tail of the machine, just to prevent it dipping in the water.

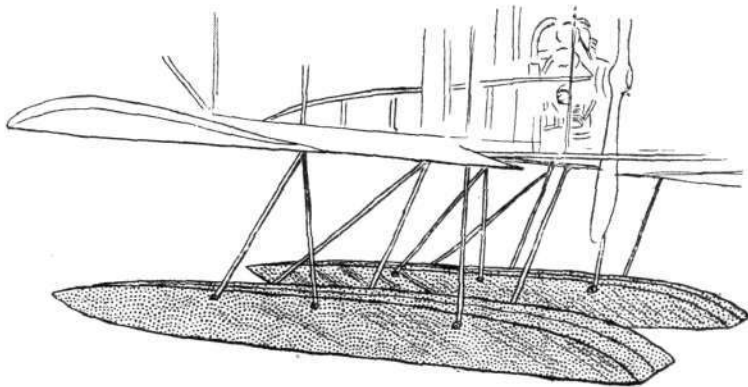
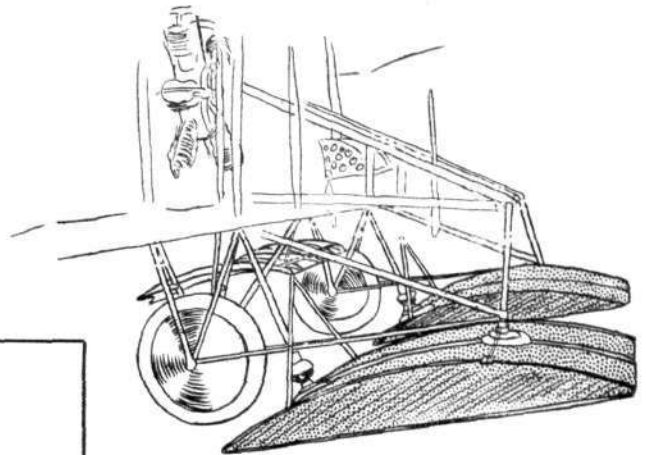
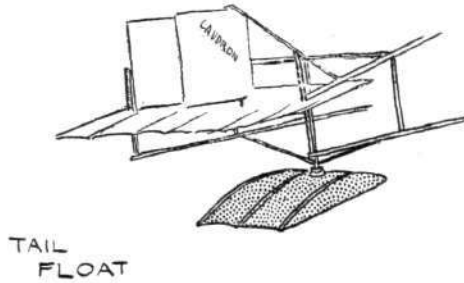
"The position of the float is most important. Not only is it important to the general efficiency of the machine, to the power of rising from and alighting on the water, but it is essential to the successful starting of what, I believe, will be a new sport, in that the position of the floats should be such that it should be impossible for the machine to turn over on to its nose. If the floats are set at about the same angle of incidence as the machine, and well forward, I think it would take a very bad landing indeed to cause an accident of this sort.

"The design and building of the floats is naturally one on which there is room for a great deal of experiment. It is quite evident that the tendency of the water to hug the floats is enormous. As an instance, I may give that of Maurice Farman's machine at Monte Carlo, *with* wheels and *without* wheels; Renaux who was piloting this machine, with the wheels fitted and dipping in the water, to a depth of about seven or eight inches, was unable, notwithstanding the fact that the wheels were naturally revolving, to get his machine to leave the water at all. After removing the wheels, he carried six passengers in flight with ease. It suggests a point for the preliminary testing of aeroplanes intended for water use, which is to fly them very heavily loaded, to account for the floats that will be afterwards attached. This also carries out my idea, to which I have previously referred, of making certain that the flying part of the hydro-aeroplane is as efficient as it is possible to get it *before* fitting the floats.

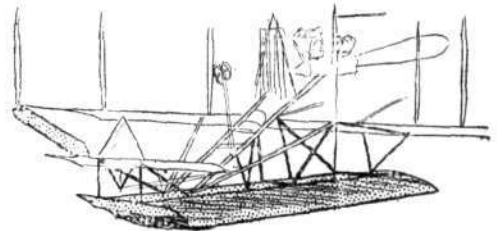
"Hydroplaning very much minimises the risks of flying. Although at Monte Carlo we had the opportunity of seeing extraordinarily successful flights from the water, we also had the opportunity of seeing the most extraordinarily bad accidents, from a land point of view, without any damage to pilot or passengers. To dive down, head first, in a *vol piqué*, is generally considered about as serious an accident as can be had, and equally to fall tail first; but the dives that took place into the water, although scarcely an amusement, were at any rate devoid of disaster. One would naturally think that there would be great difficulty in extricating oneself from planes and wires, but judging by results, and it is only by results that we can safely form an opinion, this is not the case, for in all accidents to hydro-aeroplanes the result to pilot and passengers has been no worse than a ducking. There is also this further safety, the machine, however badly broken, will, if fitted with efficient floats, sustain the weight of at least the number of persons that it carries in flight.

"There is also another great difference between flying over water and flying over land; in cross-country flying, certainly in England, my opinion is that real safety is not obtained under 1,500 or 2,000 ft., which would enable the pilot on a machine with efficient planes to select a safe alighting ground. Over the sea, one might say, it is exactly the reverse; there is no object obtained, except, of course, for naval purposes, in flying high, there are no houses, no trees, no

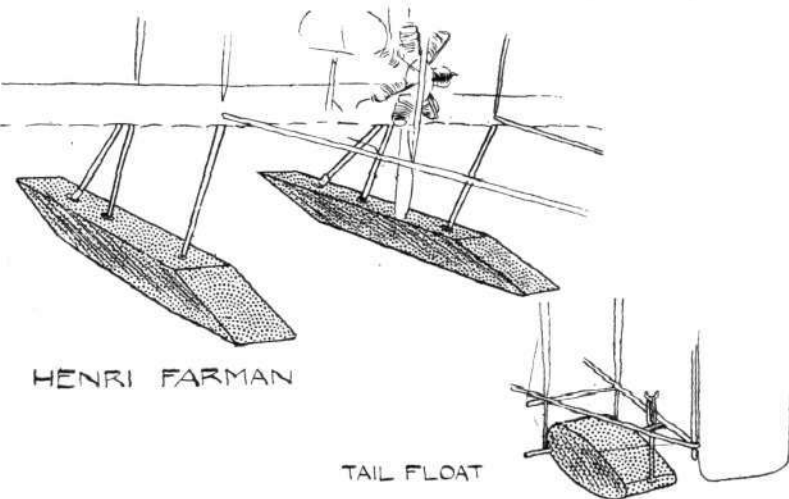
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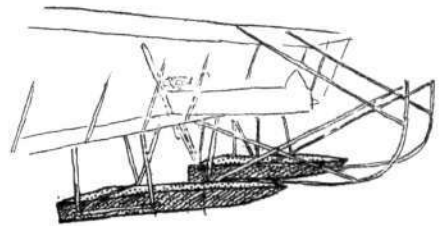
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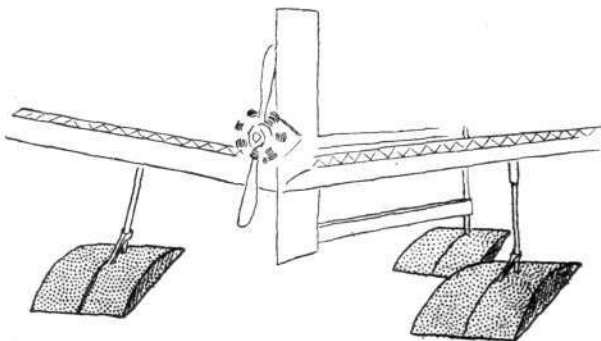
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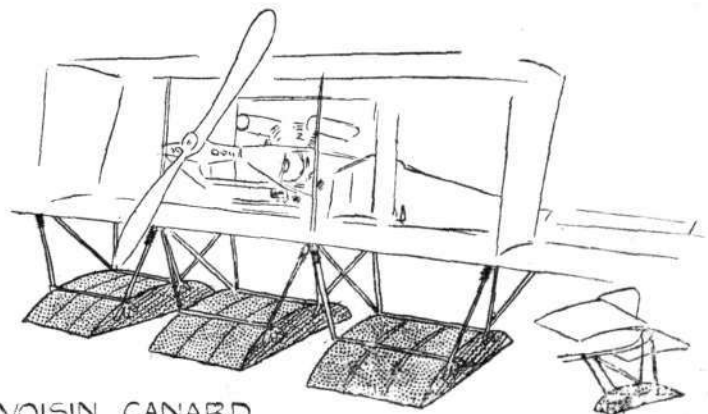
MAURICE FARMAN



TAIL
FLOAT



FABRE



VOISIN CANARD

telegraph wires on the sea, and, therefore, even in the case of a fall from a small height into the water, which by displacement will very much minimise the force of the contact, the pilot and passengers should escape any accident, and be only the worse, or better, for a bath.

"Once it is proved that hydro-aeroplaning is safe, and I am certain that it has only to be seen to be convincing on this point, flying over water will become a very popular sport. The delights of skimming over the Mediterranean I am quite unable to describe, but I can only bring it before your imagination by comparing it with the flight of a swallow. One can actually skim lightly on the top of the water at 25 or 30 miles an hour, using the machine as a hydro-aeroplane, or one can fly at any height, and alight at will, in coasting trips. If a small cape or promontory is encountered it simply means rising to a few hundred feet, and coming down to the water at a lower level on the other side.

"From the naval point of view, after the meeting at Monaco, there is no room for doubt as to the importance of such machines. Wireless telegraphy is, of course, of the greatest service in the despatch and receipt of news, but in the ordinary battleship the wireless operator is dependent on an outlook from a very limited height. The hydro-aeroplane is able to go up to a height of thousands of feet, and alighting on the water close to the ship this same wireless operator will receive news of what is in sight, within a radius as far as the human eye, aided with the very best glasses, can see. I have no hesitation in saying that the Dreadnought without an aeroplane will certainly be beaten by the Dreadnought with an aeroplane. When I first said this, years ago, my idea was that the aeroplane would drop on the water by the side of the ship, the pilot and motor being rescued, but the aeroplane being probably damaged. Now, however, we have in the hydro-aeroplane, not merely an idea, but an established fact. There is, of course, much to be done before a machine will land on a six-foot wave, but since the meeting at Monaco, although I have crossed the Channel many times, I have never crossed it when, in my opinion, it would have been impossible for a good pilot, on a good machine, to alight on the sea. From the military point of view, bomb dropping from the aeroplane, whilst causing great discomfort in the enemy's camp, has not yet been proved very efficient I believe, on account of the difficulty of getting a bomb which will do sufficient damage. My impression is, however, that a bomb dropped on the deck of a battleship will be a very

different matter. This can be done to-day; and in case of war (and it must be remembered that we are maintaining Dreadnoughts and a huge fleet especially for war) we must be ready not only to act on the offensive, but the defensive. Our huge naval expenditure is in danger unless we pay what may be called the small extra amount for insurance.

"It seems to me that we must make the ship to fit the hydro-aeroplane. It is, I believe, the general opinion of authorities on the subject, that with each fleet there will have to be, in the very near future, a special ship or ships devoted entirely to aerial machines. Once this is decided they can be built with special slips, with enormous hatchways, and so on. Quite apart from the question of hatchways, or ordinary constructional difficulties, I can hardly imagine an aeroplane being in use on a battleship in case of war when the firing is in action.

"We may, of course, indeed we certainly *shall*, come to aeroplanes which may quite easily carry guns sufficiently large to be of great service, but I have always refrained from prophecy as regards aviation, and what we have to do at the moment is to make sufficient use of what we *have*. When it has proved itself, as the hydro-aeroplane undoubtedly has, reconnaissance or scouting, whether from the military or naval point of view, is of such enormous value that we cannot possibly neglect the arm that will give us the enormous range of vision provided by the aeroplane and the hydroplane.

"I believe I was asked to read this paper because I had seen everything at Monte Carlo, and flown on the leading hydro-aeroplane there. All I can say from the opinion I formed after that meeting is this:—

"1. I would say to our naval authorities it is absolutely necessary to provide a large fleet of hydro-aeroplanes at once, using the most efficient machines we have at the moment, whatever the developments may be in the future.

"2. To the sportsman I would say, take up the hydro-aeroplane as a pastime. He will find that skimming over the sea, and making coastal trips, will provide a most delightful sport.

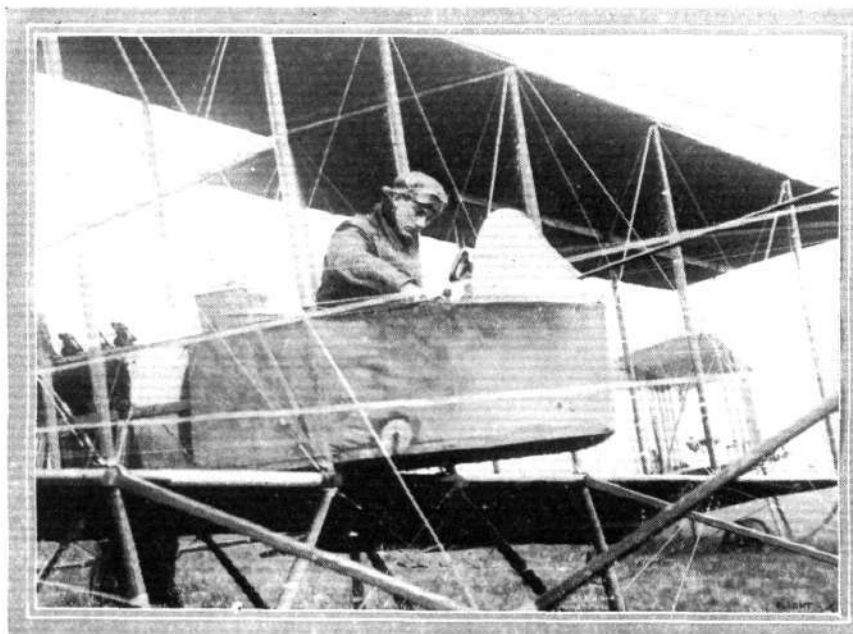
"3. To our constructors I would say, experiment in every way possible to obtain the most efficient floats, with the object of being able to alight, even in the roughest sea; but as I previously said, I advise them to commence these experiments with the most efficient flying machine, as a separate point to the fitting of the floats."

THE SECOND JUNE MEETING, HENDON.

ALL day long last Saturday the wind was driving in strong gusts of from 20 to 25 m.p.h., but in spite of this a goodly crowd turned up at the aerodrome in the afternoon. An interesting programme had been arranged, but owing to the elements all events had to be declared off. Besides a cross-country race and a speed handicap, Mr. Robert Slack was to have started his aerial tour of England on behalf of the International Correspondence Schools. Mr. Slack has just received one of the latest type of Blériot monoplanes, and it was this machine he intended to use.

Another event was to have been a competition for the first student of the I.C.S. aviation course, who flies one mile over British soil. Messrs. J. H. James and H. H. James, had hoped to take part in this event, but were unable to do so, not only because of the weather, but because of the rules of the Royal Aero Club, which preclude anybody from flying in public competitions unless they have obtained their pilot's certificate. Flying in any case, however, was out of the question, and how to hold the interest of the crowd must have been a regular puzzle for the aerodrome management. Daylight fireworks were sent up at intervals, and at last, to everyone's surprise, Louis Noel started off on the old Farman (No. 22). He did about five circuits under most trying circumstances, being almost beaten to earth again and again along the railway embankment, but he managed to keep the machine under perfect control. Grahame-White then made a couple of straights on the same machine—which, by the way, is in a very ragged condition, the fabric on the leading edge of the lower plane being torn away, and many holes being apparent in the planes. Then there was another long interval, broken by Verrier, who had the Maurice Farman brought out. He made a splendid flight with a passenger, flying rather high, it appearing to be much steadier up above, and finishing with one of his "variable speed" *vol planés*.

Little else followed to pass the time away—except some more daylight fireworks and a band of Scotch pipers, who walked up and down in front of the enclosures—until 6 p.m. Then Louis Noel flew a circuit and a-half, but as it was none too pleasant he came down. Shortly after it was announced that the aviators had decided that the weather was too bad to do any more flying, so the meeting was declared closed.



M. Pierre Verrier, who has been giving some fine exhibitions of the capabilities of the Maurice Farman biplane before a number of British military and naval officials at Hendon, in the pilot's seat of his machine.

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

Committee Meeting.

A MEETING of the Committee was held on Tuesday, the 18th inst., when there were present:—Prof. A. K. Huntington, in the Chair, Mr. G. B. Cockburn, Col. H. C. L. Holden, C.B., F.R.S., Mr. C. F. Pollock, Mr. A. Mortimer Singer, and the Secretary.

New Members.—The following new Members were elected:—J. de Meray, Gustave Louis Fernand Garnier, Major F. D. Henslowe, C. Hubert, Capt. Mark Kerr, R.N., Lieut. W. S. E. Money, and Hugh Percy Nesham. Total membership to date: 1,381.

Aviators' Certificates.—The following aviators' certificates were granted:—

232. Staff-Sergeant Richard H. V. Wilson, R.E. (Bristol biplane, Salisbury).
233. Lieut. Desmond L. Arthur (Bristol monoplane, Brooklands).
234. Lieut. Ercole Ercole (Bristol biplane, Salisbury). Subject to permission of Aero Club of Italy.
235. Paul Dubois (Deperdussin monoplane, Hendon). Subject to permission of Aero Club of France.
236. Capt. John H. W. Becke (Bristol biplane, Brooklands).
237. Norman S. Roupell (Howard Wright biplane, Hendon).
238. Edward H. Morriss (Howard Wright biplane, Hendon).
239. Capt. A. D. Carden, R.E. (Dunne biplane, Eastchurch).

Public Safety and Accidents Investigation Committee.—On the motion of Col. H. C. L. Holden, seconded by Mr. A. Mortimer Singer, the following report of this Committee was unanimously adopted:—

Meetings were held on the 5th and 17th June, 1912, when there were present:—Col. H. C. L. Holden, C.B., F.R.S., in the Chair, Mr. A. E. Berriman, Mr. G. B. Cockburn, Mr. J. H. Ledebor, Mr. W. O. Manning, Mr. M. O'Gorman, Mr. Alec Ogilvie, Major-General R. M. Ruck, C.B., R.E., and the Secretary.

SALISBURY ACCIDENT.—Report on the accident at Salisbury Plain on Sunday, May 19th, 1912, at about 7 p.m., when one spectator was killed and several injured:—

Brief Description of the Accident.—Lieut. A. E. Burchardt-Ashton was flying on a Bristol Tractor biplane. It was the first time he had flown on this particular biplane or on any tractor biplane. The aircraft, on landing, ran into the spectators, killing one boy and injuring several other spectators. The aircraft then turned completely over. The aviator was unhurt.

Lieut. A. E. Burchardt-Ashton was granted his Aviator's Certificate No. 201 on April 16th, 1912, by the Royal Aero Club.

Report.—The Special Committee sat on the following dates:—May 28th, June 5th, and June 17th, 1912, and received the written reports of four eye witnesses, as well as the evidence given at the inquest, as reported by Mr. G. B. Cockburn, who attended the inquest on behalf of the Committee.

Mr. G. B. Cockburn subsequently examined the engine and radiator, with a view to ascertaining how much their relative positions on the aircraft obscured the view of the aviator.

From the consideration of this evidence the Committee is of opinion that the following facts are clearly established:—

1. That the aviator was flying in the proper direction towards his shed and made his descent on the usual landing ground.
2. That owing to the size and position of the radiator the aviator did not see whether the ground directly in front of him was clear or not.
3. That the spectators were on the landing ground and were in the path of the aviator in landing, in imminent risk to themselves and the aviator.
4. That the aircraft first touched the ground at about 100 yards from the chains which run parallel to and are 25 yards in front of the sheds. The aircraft turned over when about 15 yards from the chains.
5. That the speed of the aircraft on touching the ground was approximately 50 miles per hour. A following wind of about 10 m.p.h. was blowing at the time.

Opinion.—The Committee is of opinion:

1. That the aviator was not to blame for the accident.
2. That the accident was caused by the spectators being on the landing ground, on which they had encroached owing to the absence of proper control.
3. That the accident might not have occurred had the aviator's view ahead not been obstructed by the radiator.

Recommendation.—The Committee recommends that this report

be sent to the War Office, with the suggestion that such steps as may be considered necessary should be taken, in conjunction with the British and Colonial Aeroplane Company, for the better control of the spectators in the vicinity of this flying ground, to avoid any recurrence of a similar accident.

It was unanimously resolved that the report be forwarded to the Committee, with a recommendation that it be published *in extenso*.

Petrol Committee.—Letter was read from the Royal Automobile Club of June 6th, 1912, inviting the Royal Aero Club to nominate three delegates to serve on a Committee of Enquiry.

It was resolved to nominate the chairman (Sir Charles D. Rose, Bart., M.P.), Prof. A. K. Huntington, and Sir Henry Norman, M.P.

Point-to-Point Balloon Race.—The Committee examined the log sheets in connection with the Balloon Race from Hurlingham, on Wednesday, June 12th, 1912, and awarded the cup presented by Mr. John Dunville to Mr. A. Mortimer Singer. This race resulted in a very close finish, only 350 yards separating Mr. A. Mortimer Singer and Lieut. B. H. Barrington-Kennett.

Wilbur Wright Memorial.—The question of a memorial to the late Mr. Wilbur Wright was considered and the following Sub-Committee was appointed to report to the Committee:—The Chairman (Sir Charles D. Rose, Bart., M.P.), Col. H. C. L. Holden, C.B., F.R.S., and Prof. A. K. Huntington.

The following letter was read from the Aero Club of America:—

Aero Club of America,

297, Madison Avenue, New York, May 31st, 1912.

The Royal Aero Club of the United Kingdom.

Gentlemen,—I am directed by the Board of Governors to express on behalf of the Club their appreciation of your sympathetic cablegram sent on the occasion of the death of our distinguished member, Mr. Wilbur Wright.

This appreciation on your part of Mr. Wright's attainments is very gratifying to us. We feel that in Mr. Wright's death not only has America, but the entire world, suffered loss that is almost irreparable.

Yours very truly,
(Signed) WINTROP M. SOUTHWORTH,
Assistant Secretary.

Late Hon. C. S. Rolls and Mr. Cecil S. Grace.

The Archbishop of Canterbury has kindly consented to unveil the stained glass window erected in the Church at Eastchurch in memory of the late Hon. C. S. Rolls and Mr. Cecil S. Grace. The ceremony will take place on Friday, July 26th, 1912, and the exact time will be announced later.

Aerial Derby.

Mr. T. O. M. Sopwith lodged a protest against his disqualification in the above race. The Stewards of the Meeting met on the 14th inst., and decided that they could not uphold the protest. Mr. Sopwith has now lodged with the Royal Aero Club an appeal against this decision, and the matter will be adjudicated upon by the Stewards of the Royal Aero Club, whose decision is final and without appeal.

Balloon Contest at Hurlingham.

The Long Distance Balloon Contest for the Challenge Cup presented by Mr. F. Hedges Butler will take place to-day (Saturday) from the Hurlingham Club, Fulham, S.W., at 3.30 p.m.

The following are the entries in the order of start:—

Competitor.	Balloon.	Pilot.
1. A. Mortimer Singer	Planet, 80,000 c.f.	A. Mortimer Singer
2. Gilbert Dennison	Billie II, 28,000 c.f.	E. T. Willows
3. Mrs. John Dunville	Banshee II, 80,000 c.f.	C. F. Pollock
4. A. P. Hohler	Esperance, 50,000 c.f.	A. P. Hohler
5. Capt. E. M. Maitland	Pompadour, 50,000 c.f.	Capt. E. M. Maitland

Members of the Royal Aero Club will be admitted to the Hurlingham Club free, on presentation of their Royal Aero Club membership cards.

Members of the Royal Aero Club can obtain special vouchers for the admission of their friends, who are not members of the Royal Aero Club, to Hurlingham, from the secretary of the Royal Aero Club. These vouchers will admit on payment at the entrance gates.

166, Piccadilly.

HAROLD E. PERRIN, Secretary.

AIR EDDIES.

WHATEVER other contributory causes there are, it certainly seems to me that the eminently successful meetings that the proprietors of the London Aerodrome have been holding regularly out Hendon way since Easter, are doing a wonderful lot of good for exhibition flying. Last year exhibition flying in England was a very dead egg, due undoubtedly to the bad repute that had been set up by the knowledge that several of our big English meetings had been run at a severe financial loss. But then, amongst other causes, their management was bad. Now, along comes the Grahame-White Co., as proprietors of the Hendon flying ground with a very good idea of how meetings should be run, and we are shown that, after all, aviation pays, and pays handsomely.

The effect has been almost immediate. Several pilots owning machines, to whom I have spoken, tell me that practically all the available good, sound "ticket men" are booked up for the whole of the season to give exhibition flights at different places round the country. Indeed, so numerous have been the demands for aviation displays that the only trouble now lies in finding reliable pilots who can be placed in charge of machines, and sent away to help in fulfilling all the engagements. This comes as rather a pleasant shock to the state of things hitherto pertaining.

So many pilots have qualified during the last year or two, and so few, relatively, are the machines for them to fly, that most of those in the know have been reckoning if a pilot gets a job it means to say that he is either endowed with exceptionally clever "hands," that he has got some money to invest, or that he is receiving very little in the way of salary. But what I have seen and heard certainly upsets this supposition. Things are improving all round. Let us therefore rejoice, for from this reversal of the order of things the aviation industry will benefit all round, and just give that requisite fillip to set the ball rolling in real earnest.

W. H. Ewen is one that is feeling the effects of this boom. I managed to wheedle out of him that he has planned a tour of exhibition flying that will take him well nigh four months to complete. For this purpose he has gone over to the Caudron establishment at Crotoy to take delivery of a new 80-h.p. Anzani-engined passenger-carrying biplane of that make. He reckons on having the machine at Hendon by to-day, and if the weather is anything like decent he will start right away on his trip.

He has now pretty well recovered from the nasty toss he suffered at Hendon some few weeks ago. Plaster still lingers on his face, but otherwise he is quite fit except for occasional temporary lapses of memory. Last Sunday, passing his house on leaving the aerodrome late in the evening, he called me in to ask me if I remembered what he had done with a bunch of important contracts, the signing of which he had got me to witness. He had then been searching the place inside and out for quite an hour and a-half, and had succeeded in arousing the whole household to a state of frenzied excitement. I don't know what made me think of the waste-paper basket, but there they were, together with several other more or less important letters.

Of course, he swore he could not have been so absent-minded as to put them there himself. But we ha'e oor doots, don't we, nurse?

Mr. W. Ridley Prentice, one of the shareholders in the now defunct Aeronautical Syndicate, tells me that he is still associated, and moreover, *permanently* associated, with Mr. H. Barber in that gentleman's new departure as consulting aeronautical engineer, despite the reports that got around that he was reckoning to branch out into many weird and wonderful schemes. Prentice is one of the many marine men to take up aviation. He holds *brevet* No. 67, and was the second in England to get his ticket under the present figure-of-eight test. Since then he has done quite a lot of flying on the Farman and Valkyrie, and with such a thorough experience in aeronautics he should be a very valuable asset to Mr. Barber in his professional work. I shouldn't be surprised to hear of him doing a little amateur flying shortly.

Since the appearance of our paragraph relating to the Isaacson engine last week, it has been given a practical trial on Mr. James Valentine's Bristol monoplane at Hendon. Although the weather was too rough on Saturday last to test it under flying conditions, the static thrust was taken and found to be 500 lbs. It will be good to bear in mind that one of the best French engines rated at 50-h.p. gives on an average a thrust under similar conditions of something in the neighbourhood of 360 lbs.

By the way, there is no harm now in mentioning that Grahame-White intends doing something with hydro-aeroplanes this season. He has a couple coming over from France—a Caudron and a Henry Farman three-seater, fitted with one of the new 80-h.p. Gnomes.

Lewis Turner seems to be getting a good deal of luck at Hendon. No more than a month ago, flying in quite a strong wind, he had to make a sudden descent through engine stoppage. I happened to be quite near, and between us we found that his magneto was hanging on by about two threads of the only bolt that had not jolted out, and by the wire that connects it to the carbon-brush on the other side of the Gnome mounting. Last Sunday he had to make another sudden descent, and we found one of the connecting-rods poking out through a cylinder-wall. Something very nasty must have happened inside.

Although it has been generally accepted that Hamel was the winner of the Aerial Derby, this point is at the time of writing still officially in the balance. Sopwith, who was disqualified, entered a protest against the decision with the stewards of the meeting, who found themselves unable to revise the decision they had previously arrived at. He thereupon entered a further appeal to the stewards of the Royal Aero Club, and after their inquiry the decision, whichever way it goes, will be final.

This brings back to mind that the reason Guillaux did not finish the Aerial Derby course was really due in the first place to his missing his way. After passing the Barnet turning point he steered too much to the north and flew past the aerodrome almost as far as Watford. He had just caught sight of the aerodrome, and was making for it from that direction when his petrol gave out. Had he come on a straight course from Barnet he would undoubtedly have got back to Hendon with perhaps just a little petrol to spare.

The Breguets are coming over here to build—they have established an English firm under the style of Breguet Aeroplanes, Ltd., which will be controlled by Mr. R. Garnier, who formerly looked after their interests in France. The machines they are putting in hand, to be entered for the Military Trials, are of the same type as those which did so well in the French Military Competition last year. They are fitting Salmson motors, *système Canton-Unné*, equipped with silencers.

Marcel Desoutter, the youngest of our English pilot aviators—he has not long turned eighteen—has been taken on by the Grahame-White Aviation Co. to do Blériot flying in place of Hucks, who recently left them to join in with Mr. Barlow. Although so young, he has mastered the controls of three distinct machines—the Blériot, the Deperdussin, and the Caudron biplane.

B. C. Hucks arrived at Hendon on Wednesday evening from Hardelot, with Mr. Harold Barlow as passenger, on the new 70-h.p. Blériot, of which they at the week-end took delivery in Paris. He carried out the preliminary tests of the machine on last Sunday morning at Issy, flying round the Eiffel Tower in a wind varying between 25 and 35 miles an hour. No doubt the Issy people simply expected to see a hop or something of that nature, and so I can guess they were rather surprised at the flight actually undertaken.

As for his trip from Paris to Hardelot, it is best described in the words he managed to cram on the back of a postcard I have received from him. "Hardelot, June 17. Arrived here 11.50 from Paris. 160 miles non-stop in 2 hours 20 mins. Carried Barlow as passenger. Latter half journey terribly rough. Found wind blowing half gale on landing (40 m.p.h.). Shall cross over and make for Hendon when weather permits."

That W. D. Johnstone, who was so popular at Brooklands and indeed wherever his flying duties took him, has been taken from among us is indeed sad. He had for the past month or so been flying on the Dunne monoplane that is being prepared for the Military Trials. On Friday last, as most FLIGHT readers know by now, he set out on a motor cycling trip with Sub-Lieut. F. E. T. Hewlett, one of his fellow aviators at Eastchurch. Failing to negotiate a bend descending Kingsborough Hill, he dashed into a telegraph pole and sustained the injuries to which he succumbed later on in the day at Minster Infirmary.

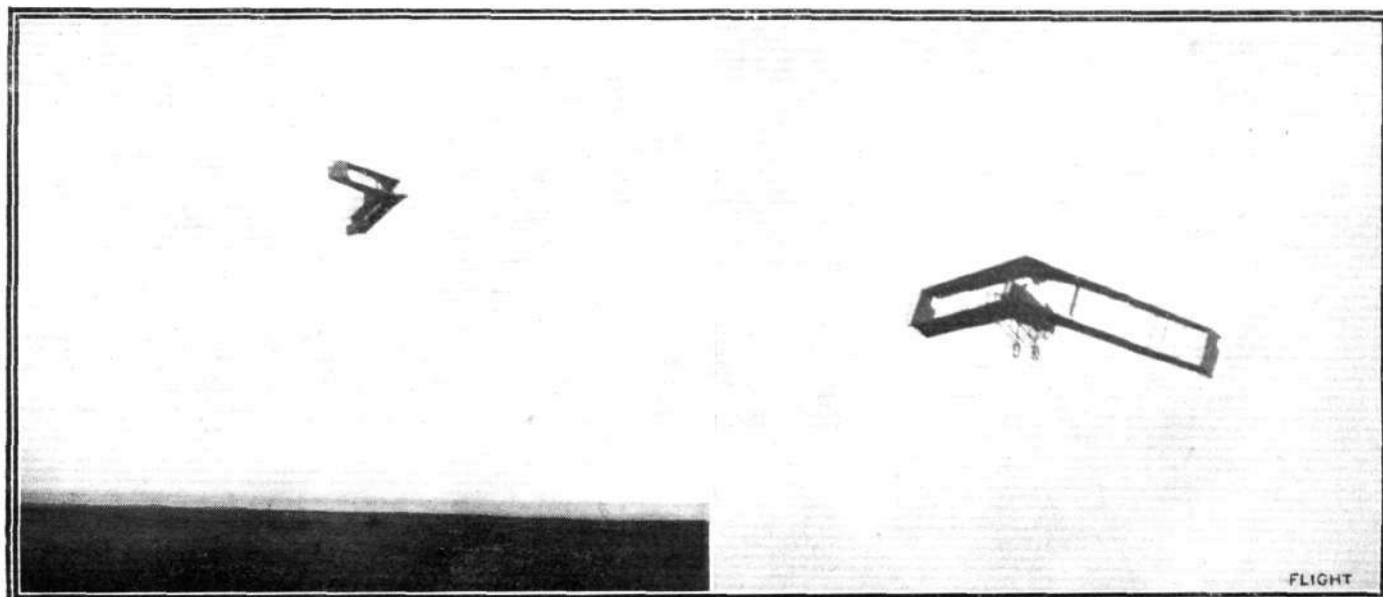
We extend our heartfelt sympathy to all his friends and relations. We ourselves suffer, for aviation has lost another good man.

"OISEAU BLEU."

THE DUNNE MACHINES IN FLIGHT.

WE publish this week, two or three photographs taken by Miss Dunne of her brother's machines at the Royal Aero Club's Eastchurch flying grounds. Everyone will rejoice to hear that Mr. Dunne has recovered from his very serious illness, and is now back at work again. Not only is Mr. Dunne himself flying at Eastchurch,

absence of the lower plane gives it a very extraordinary appearance. We have heard other pilots describe the flying of this machine as revolutionary, and certainly it may be taken for granted that the Astra Co. of France would not have taken up the French rights and be making preparations for building these machines in their own



Capt. Carden practising for his *brevet* on the Dunne biplane.

Photo by Miss Dunne.

but Capt. Carden, R.E., as our readers know, has been making the best sort of progress, passing for his *brevet* last week, and Capt. Carden, as some of our readers may not know, has the misfortune to have lost an arm, wherefore his practice with the Dunne machine is worthy of very special attention.

Two of the photographs show the biplane in flight, and both illustrate very clearly the V plan of the wings, from which, in conjunction with the peculiar variation in camber from shoulder to tip, is derived the high degree of natural stability that this flyer has always claimed to possess. It has flaps at the extremities of the main planes, but these are for the purpose of steering and elevation only; they are independently operated by separate levers, one on each side of the pilot, which adds to the significance of Capt. Carden's performances.

The monoplane, which is illustrated with Mr. Dunne in the pilot's seat, is built on the same principle as the biplane, but the

country if they did not think a great deal of them. In the early days of motor cars, it will be remembered, all the good things came from France in the first instance, but the tide turned at last. Let us hope that it may do so in aviation, and long may men like J. W. Dunne, who are devoting the best of their lives to the cause, be spared fully to achieve the ends they have in view.



Aerial Greetings from Germany.

AMONG several communications carried by the Aerial Post in various parts of the world which reach the Editor of FLIGHT, comes one from the Editor of our German contemporary, *Flugsport*. This card was conveyed in the initial stage of its journey from Frankfort with a large number of others on a Euler biplane, "Yellow Dog" by name, piloted by Lieut. Von Hiddessen. Hearty reciprocations to our brother Editor of the greetings contained therein.



Photo by Miss Dunne.

J. W. Dunne on his monoplane at Eastchurch, where, having recovered from his illness, he has been flying again most successfully. The Astra Co. have taken up the rights for manufacturing the Dunne machines in France.

FROM THE BRITISH FLYING GROUNDS.

Brooklands Aerodrome.

ON Wednesday last week flying was prevented by wind until the evening, when school work was proceeded with under none too good conditions. Hotchkiss made several flights with Capt. Macdonald, a new pupil, then handing machine over to Agnew and Holyoake, who both did straights. On Sopwith's Farman, Raynham commenced with a solo, then Herbert, Webb Bowen, Alston, and Howell all did straights. Later the two first-named were given instruction in turning by Sopwith, who also took a lady passenger for a short trip. Darbyshire was practising on the Deperdussin brevet machine, and Lieuts. Bellairs and Bowly were both rolling. On Thursday morning, Agnew, Holyoake, and Anderson all made improved straights, while Hotchkiss gave passenger instruction to Macdonald. At the Sopwith school, after a solo by Raynham, Hedley made a flight of about ten minutes. Webb, Bowen, Herbert and Powell all made good straights on the same machine. On the Deperdussin Dawes and Bellairs continued rolling practice. Wind and rain stopped further flying.

On Friday morning Hotchkiss managed to get in a little tuition very early, whilst the other schools still slumbered. Sippe was out engine tuning, making a short flight. In the evening there was nothing doing, while Saturday proved another blank day.

On Sunday evening Hotchkiss and Bendall were up first for solos. Merrian then flew for some 15 mins. with a passenger. Holyoake and Anderson then continued with straights, followed by Agnew, who made his first circuit. On Sopwith's Farman, after a solo by Raynham, Webb Bowen and Hedley both showed that they were well within reach of their *brevets*. In the evening Sopwith returned from Hendon on the Blériot, having had an excellent journey.

On Monday morning Bendall gave tuition to Macdonald, while Agnew and Anderson both made some excellent circuits in spite of a puffy wind. Holyoake made some good straights. Hedley, Webb Bowen and Herbert all did circuits on the Farman, while later Raynham gave instruction to Lieut. Wadham. Capt. Wood was flying for about 15 mins. at a good height and the Deperdussin was out for school work. In the evening the only flying was two short solos by Hotchkiss and Raynham, the weather being bad.

Eastbourne Aerodrome.

ON Wednesday last week, Lieut. Bone and Gassler were both out, the former putting in some good rolling practice and the latter excellent short flights. Thursday, Friday and Saturday were all too

rough for outdoor work, but on Sunday the weather improved considerably towards the evening, when Lieut. Bone was able to put in some more practice. He showed a marked improvement towards the end of the evening, and was doing hops in great style.

On Monday everyone was up early, as Mr. McClean was expected from Eastchurch. Shortly after 6 a.m. he was sighted over Pevensy, heading straight for the ground, where he shortly afterwards landed



Photo by Oswald Short.

Lieut. Spencer Grey, R.N., with Assistant Paymaster Frewin, R.N., on the new naval 70-h.p. Short tractor biplane at the Royal Aero Club's Eastchurch flying ground.

in a splendid *vol plané* from about 500 ft. He reported an uneventful, but most enjoyable journey. The distance, some sixty odd miles (he came *via* Tunbridge Wells, in order to have the pleasure of passing over his house), was accomplished in 1 hour 16 mins., which, taking into consideration that he had his mechanic and a certain amount of luggage on board, was an extremely good performance.

London Aerodrome, Collindale Avenue, Hendon.

Grahame-White School.—There was no flying in the morning of Monday, last week. In the evening Capts. Salmond and Nicolas, and Messrs. Fuller, Hoelscher and Scully were doing straights with M. Noel; Baroness Schenk up for a passenger flight, and Mr. Kershaw putting in circuits, all on school 'bus.

On Tuesday morning Capts. Salmond and Nicolas, Mr. Fuller and Baroness Schenk were all in for straights with M. Noel, Mr. Kershaw doing circuits. Evening was too wet for flying.

Half-a-gale on Wednesday stopped work, and next morning the majority of pupils were suffering from that tired feeling, effects of military discipline evident, as the only ones out were Capts. Salmond and Nicolas, who were up for straights with M. Noel in the passenger seat. About 6.0 Mr. Travers, late of Eastchurch, made a very fine flight on F 5, which now has very little lift on the tail, and the pilot's seat 1 ft. 6 ins. in front of the plane, making the machine very good to fly. Evening again hopeless.

Friday was a busy time in morning, Baroness Schenk, Capts. Salmond and Nicolas and Commander Yeats-Brown, Messrs. Fuller and Hoelscher getting two lessons each. Capt. Salmond has now broken the back of his tuition, and is doing straights solo. Yet another hopeless evening.

Saturday was a deceptive morning, as wind rose directly fog went. The only lesson was some straights by Capt. Salmond. In the afternoon wind too hopeless even for skilled flyers in race meeting.

Sunday, in morning, was too windy for school work.

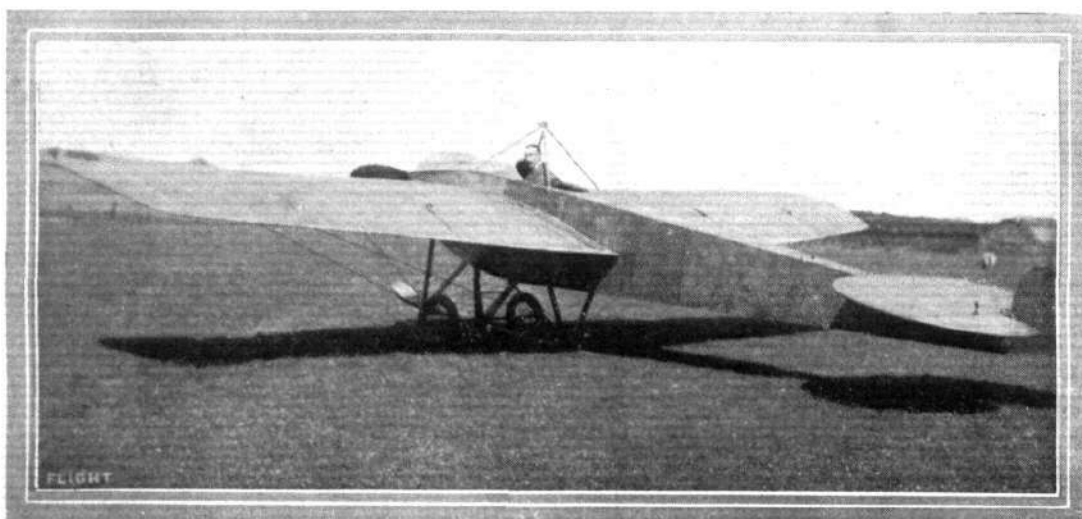


Photo by Oswald Short.

Capt. Gerrard on the military Nieuport at the Royal Aero Club's Eastchurch flying ground.

Aircraft Co.—In the presence of representatives from the Admiralty and the War Office, including Brigadier-General D. Henderson, Capt. Godfrey Paine, and Col. W. J. Bythell, the Aircraft Co.'s Maurice Farman machine was flown by Verrier, on Thursday week, in a gusty wind of 30 to 35 miles an hour. Major E. F. Calthrop and Capt. E. L. Ellington were in turn taken up as passengers, and in each case were astonished at the stability of the machine, notwithstanding the gusty wind, and they remarked on the absence of the necessity for continually using the control levers. Although the day was by no means an ideal one for showing the machine, it was noticeable that there was not the slightest hesitation in taking her out, and giving the above-mentioned passenger flights.

On Saturday, at 4.15, Verrier took a passenger for a flight, and, despite a strong wind of 30 to 35 m.p.h., did a *vol plané* from about 500 ft. He was in the air for about 14 mins.

On Sunday he was out at 4 o'clock, and carried numerous passengers. A wind of 30 miles was blowing all the afternoon. During a flight with Mr. Holt Thomas as passenger the motor was stopped at 1,250 ft., exactly over the Welsh Harp at Hendon, the machine planing into the aerodrome with perfect ease.

Blériot School.—Weather during Monday morning and afternoon last week was much too bad for pupils, but in the evening Mr. Hall took the rolling machine out and did two straights. Meanwhile, Mr. Hamel and Mr. Weir went off on their 50-h.p. single seaters to Ranelagh at 8 p.m., Mr. Weir returning at 8.30 p.m., having experienced no difficulty in finding his way, in spite of the gathering dusk and evening mist.

Next day was very windy all day, no school work being possible. In the afternoon Mr. Hamel, with Capt. Mark Kerr, R.N., as passenger in his 70-h.p. tandem Blériot two-seater, flew over to Ranelagh to give an exhibition before Their Majesties the King and Queen, the wind blowing about 25 to 30 m.p.h.

On Wednesday it was windy and raining practically all day, making it impossible for any pupils to practise.

Thursday was very misty in early morning, but about 6 a.m. it cleared, and Mr. Clappen was enabled to put in four straights on the rolling machine.

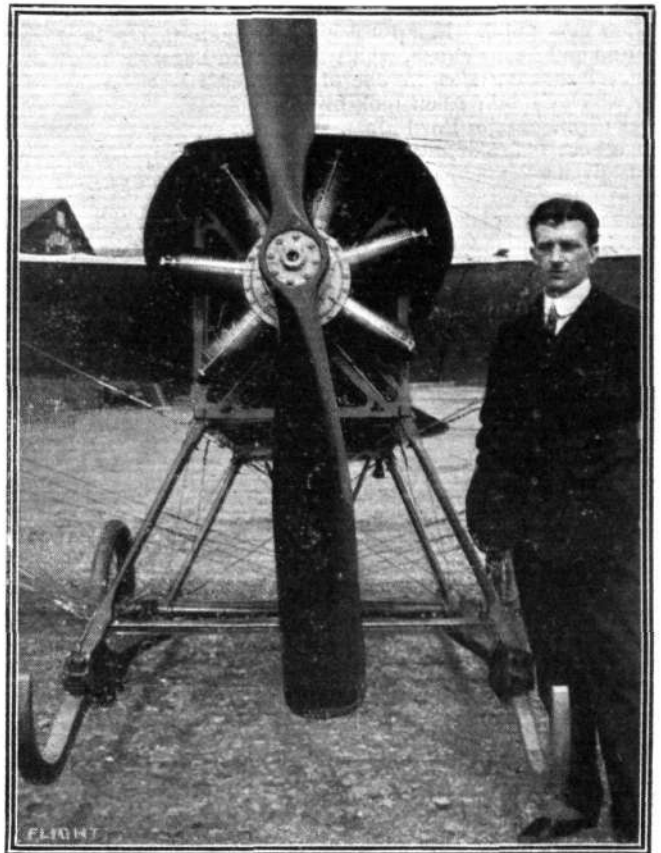
M. Gautillon tried a roll at about 6 a.m. Friday, but the wind was too strong for any useful work to be got through, and the machine was returned to the hangar. Mr. Slack then had his 50-h.p. single-seater out, in which he is doing a "circuit of Britain," under the auspices of the International Correspondence Schools, and flew for about ten minutes at about 300 ft., expressing himself very pleased with the machine, this being the first time he had flown a machine fitted with a Gnome motor on this side of the Channel.

No school work possible Saturday owing to bad weather, and Sunday it was windy all day, although fairly calm at about 6 p.m., when Mr. Weir had his 50-h.p. single-seater out for a practise spin, going over to Chipping Barnet, prior to his attempting the qualifying flights for his superior *brevet*, which he intends attempting immediately the weather is at all respectable.

Salisbury Plain.

Bristol School.—There was no flying on Monday morning last week, on account of the state of the weather, but in the

afternoon Pizey was flying with Lieut. Christy, a new pupil, as passenger, afterwards taking up Mr. Lindsay Campbell on one of the school monoplanes. Jullerot was on another of the monoplanes with Lieut. Christy, Bendall giving tuition flights on one of the biplanes. Good solos were made by the following pupils:—Capt. Allen reached fully 2,000 ft., and remained aloft for about half-an-hour, on one of the Bristol monoplanes, making a very good landing—this pupil has made excellent

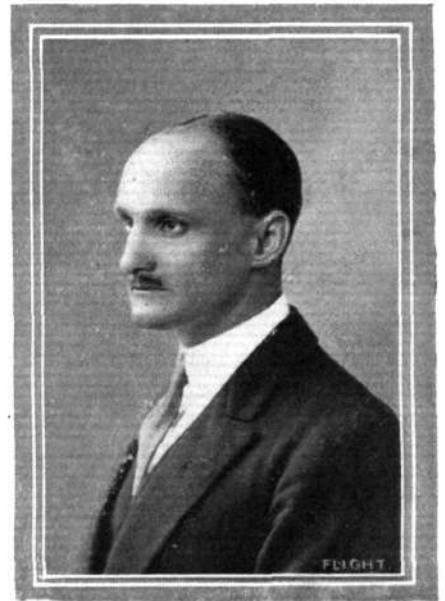


Mr. Arthur, who took his *brevet* last week at Brooklands at the Bristol school.

progress during the past few weeks; Lieut. Fielding carried out four good straight lines on a school monoplane, landing well; Mr. Lindsay Campbell got in some good rolling practice on monoplane No. 97; whilst Messrs. Pickles and Lister each made good trips on biplane No. 66a, with good landings. Messrs. Rawson Shaw and Prendergast also made good flights lasting about ten minutes. Darkness brought things to a conclusion.

Pizey was first out on Tuesday morning, taking with him Lieut. Christy, Mr. Smith Barry being on one of the school single-seater monoplanes. Captain Allen carried out a really fine flight on a two-seater monoplane, completing a couple of circuits, with steep banking and effecting a good landing. This pupil has proved himself complete master of the Bristol monoplane, which he handles in a very clever manner. Bendall was busily engaged giving tuition trips in landing practice to Messrs. England and Featherstone, on a biplane. Mr. Lister went for a solo, flying a figure of eight and landing neatly, and Mr. Prendergast set out round Fargo, flying at about 400 ft. and circling back to the hangars. Dr. Cordner was also up for a good flight, coming down after about 10 minutes. Flying was resumed again in the evening, when Busted ascended on a two-seater monoplane, after which he gave a tuition trip to Mr. England, Bendall having Lieut. Hallahan, a new pupil, for his first flight. Weather was considered unsuitable for pupils' solos.

Wednesday morning was boisterous, and outdoor work had



Capt. Becke, another pupil who last week passed for his ticket at the Bristol school at Brooklands.



M. Paul Dubois, who has just qualified for his certificate at the W. H. Ewen school at Hendon.

to be abandoned. School work was commenced towards the latter part of the afternoon, when Pizey was giving a flight to Mr. Greig, another new pupil. Kemp was giving tuition flights to Messrs. England and Featherstone, whilst Mr. Smith Barry took out Lieut. Wall. Pizey ascended in one of the double-seater monoplanes, after which Captain Allen took over the same machine and made a clever flight. Major Boyd Moss, Mr. Prendergast and Dr. Cordner were all out for solos, Busted taking Mr. England, who was afterwards given a flight by his brother Gordon England. Busted was testing a new monoplane just received from the works at Filton, the machine flying splendidly and answering the controls perfectly. Quickly attaining a good height he flew round and then made a spiral *vol plané* with engine cut off.

Kemp was out first on Thursday, taking Messrs. Greig, England and Barnwell for tuition flights, Mr. Prendergast taking a biplane for a flight. Busted then set out with Bendall as passenger to continue the tests carried out on the previous day. The wind was blowing in very strong gusts, but the machine behaved splendidly, and showed a good turn of speed, Busted arriving back at the hangars by means of a clever *vol plané* with engine cut off.

No school work was possible at all on Friday, the weather being too bad. Busted made a couple of flights in the evening, but nothing further was attempted.

Saturday was spent indoors, all the pupils being busily occupied in assembling machines, and adjusting motors, &c. Wind and rain

still prevailed in the evening, and all thought of flying had to be given up.

No improvement had taken place in the weather, and yet another day passed without flying being possible.

Royal Flying Corps.—A good deal of flying was done on Wednesday week, Capt. Loraine being the first out on the Deperdussin, making a number of circles and finishing with a neat *vol plané*. He was followed by Lieut. Conner, Corpl. Ridd, and Staff-Sergt. Wilson, each taking a turn on a biplane, and making some splendid landings. Lieut. Barrington-Kennett was also out on the Nieuport. Thursday was a very good day for flying, and Capt. Loraine was again first out on the Deperdussin, flying at a good height. Corpl. Ridd and Staff-Sergt. Wilson followed, both using biplane No. 7. Capt. Fox and Lieut. Conner, and Lieut. Porte all followed with practice on the same machine, and Lieut. Barrington-Kennett was flying the Nieuport, but in landing damaged the chassis.

In spite of a stiff wind, the corps were out on Friday, and Capt. Loraine carried some passengers on the Deperdussin. Lieut. Porte, Corporal Ridd and Staff-Sergeant Wilson were practising on biplane No. 7. Capt. Loraine was also testing the Anzani-Blériot; afterwards he went for a flight on it.

Saturday was wet, and so no flying was possible, and Sunday was also a blank day. Monday morning was quite calm, and Capt. Brooke-Popham was out on biplane No. 7, Capt. Loraine on the Nieuport, and Capt. Fox on the No. 8 biplane.

BRITISH NOTES OF THE WEEK.

The "Daily Mail" Flying Tour.

ON Wednesday of last week, M. Salmet completed the first four weeks of his tour in the West of England by flying from Bude to Newquay. In the four weeks flying was possible on 24 days, and on 18 of them M. Salmet was seen in the air. Of the remaining 6 days, 3 were hopelessly wet, 1 was lost waiting for a new motor, 1 was spent in covering the wings of the machine to make it floatable, and the other was spent on private business in London. M. Salmet's work, therefore, affords strong testimony to the practical stage to which the Blériot monoplane has been developed. On the 13th, the journey was continued from Newquay to Truro, a distance of 14 miles being covered in 9 mins., although the wind was such as

to prevent any exhibition work. On the following day Salmet went on to Falmouth, taking only 6 mins. to cover the distance of 8 miles. He had intended to fly round Land's End, but the wind prevented any attempt of this nature. Fowey was the next stopping-place, but heavy rains and thick mist on Saturday and Monday necessitated a postponement until Tuesday, when the trip of 24 miles was made in 15 mins. The course was by way of St. Austell, and on arriving at "Troy Town" M. Salmet gave an exhibition flight.

The "Amphibian" Leaves Harwich.

TO the great regret of Harwich, which borough has become very enthusiastic upon the subject of hydro-aeroplanes as the result of the visit of "H.M.S. Amphibian." Commander Samson took his departure on Friday morning last week. By way of saying good-bye, Commander Samson steered his machine over the Harbour at Harwich, and then steering out to sea, was lost sight of beyond Walton-on-Naze making his way to Eastchurch where he arrived safely. Harwich is looking forward to having a hydro-aeroplane base established within its precincts, but at present nothing official is known.

New Club House for Dover Aero Club.

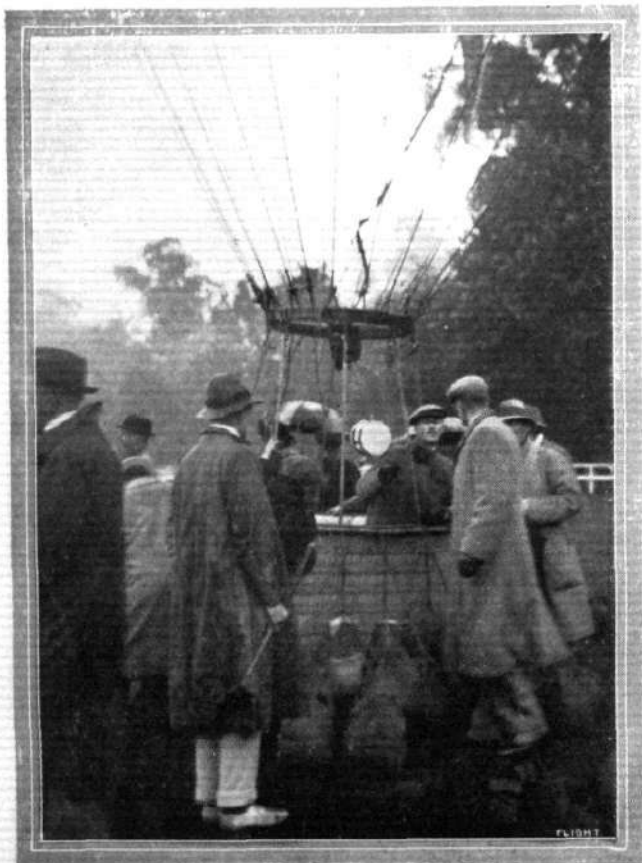
THERE was a large attendance of well-known people on Wednesday of last week at the Whitfield aerodrome, Dover, when the Marquis Camden, Lord Lieutenant of Kent and president of the Dover Aero Club, formally opened new headquarters for the club. In inaugurating the proceedings, Commander Forster, R.N., chairman of the club, pointed out the importance of aviation from a national point of view, and the good work which could be done by aero clubs in stirring up enthusiasm among amateurs. He then handed the key to the Marquis Camden, who opened the door; and this ceremony having been performed, and the band meanwhile playing the National Anthem, the president said that, although many of them at the present time had no wish to venture in an aeroplane, they should remember that it was only a little time since that they thought the same thing about motor cars. He believed that before many years the art of flying would be brought to such a pitch of perfection that everybody would be able to venture into the air.

Ladies' Day at Hendon.

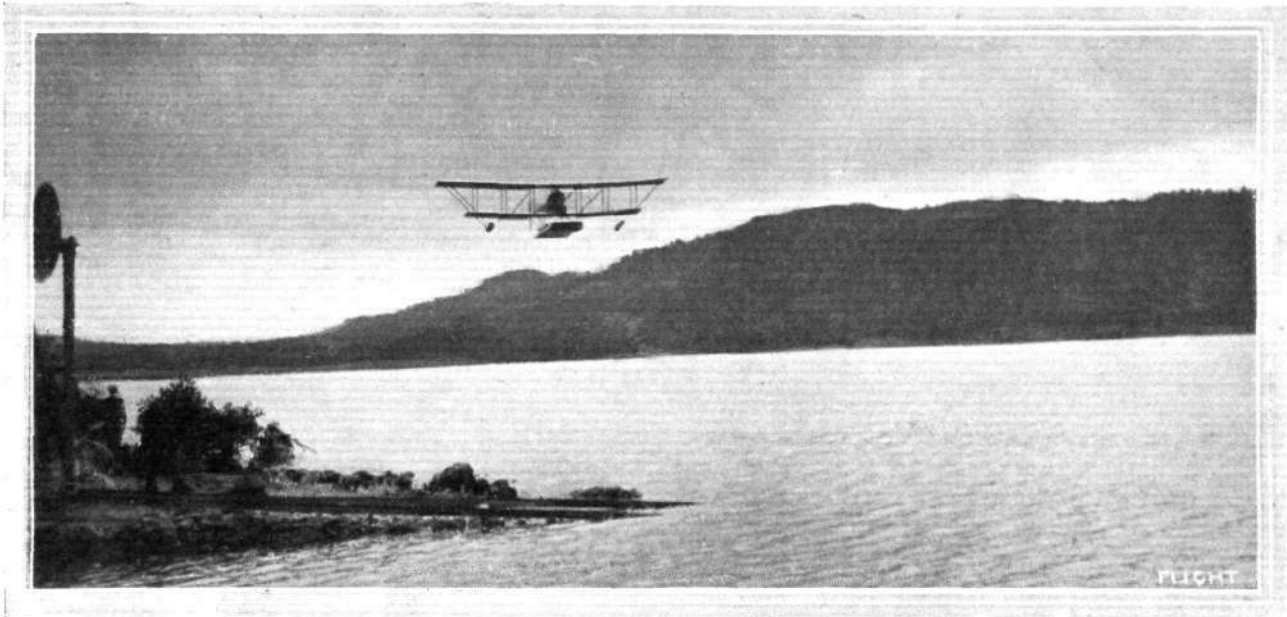
SATURDAY, July 6th, is to be Ladies' Day at the London Aerodrome, Hendon, when the Ladies' First Aviation Meeting, under the patronage of the Women's Aerial League, is to take place. Races in which women pilots will compete, and cross-country flights by men pilots with lady passengers will figure on the programme, while a special prize will be offered to the first lady pilot to carry a lady passenger twice round the aerodrome without alighting. There will be a tea tent for members of the Women's Aerial League and their friends. Further particulars can be obtained from the hon. sec. of the League, Denison House, Vauxhall Bridge Road.

The Navy's Etrich Machine Arrives.

THE Etrich monoplane ordered by the Admiralty some time ago, arrived at Eastchurch from Austria last week-end.



Capt. E. M. Maitland preparing to start in "Pompadour" at the Royal Aero Club balloon contest at Hurlingham last week.



The "Waterhen" flying with passenger over Windermere.

An Irish Prize.

WITH a view to stimulating practical interest in aeronautics in Ireland the Irish Aero Club have decided to offer a prize of between £300 and £400 for the fastest flight from Dublin to Belfast and back.

A One-Armed Pilot.

CAPT. A. D. CARDEN, R.E., who has just qualified for his pilot's certificate of the Royal Aero Club, making the required tests at Eastchurch on the Dunne automatic stability aeroplane, has the distinction of being, we believe, the only one-armed pilot in the world.

Lady Passengers on Naval Aeroplanes.

REPLYING to a question in the House of Commons by Mr. C. Craig, Mr. Winston Churchill, First Lord of the Admiralty, stated that the Lords Commissioners of the Admiralty were aware that on a few special occasions ladies who were personal friends of the naval flying officers had been given flights, and no objection had been taken to this. The naval pilots were encouraged to make voluntary flights with and without passengers in addition to those that were necessary for Service purposes, in order that they might gain as much experience as possible. Owing to the larger scale which the flying service was assuming, it was under consideration to issue instructions to the Naval Wing of the Royal Flying Corps on this subject.

A British Memorial to Wilbur Wright.

BY way of perpetuating the great work of Wilbur Wright in the cause of aviation, the Aeronautical Society intends founding an Annual Prize Lectureship, which is to bear the inventor's name. Subscriptions are now being invited, and it is hoped the response will be so substantial as to place the project on a sound financial basis.

Municipal Engineers and Flying.

THAT the Institution of Municipal Engineers is far-sighted is shown by the fact that they held one of their meetings at the Hendon Aerodrome on Wednesday, of last week. Although the rain prevented any flying until late in the afternoon, an interesting time was spent in inspecting the machines and in listening to some papers, one of the most interesting of which was by Mr. Horace Cubitt on the Structure of the Future in Relation to Aviation who foreshadowed the erection of landing-places about 120 feet high along Oxford Street, Holborn, Piccadilly and the Bank, &c.

Photographing Submerged Objects.

IT will be very interesting to see the result on the photographic plates of the experiment which Mr. Frank McClean is going through with in connection with the wrecked P. and O. liner "Oceana", off Eastbourne. Mr. McClean arrived on Monday from Eastchurch on his Short biplane, the journey taking about two hours. The idea is to take photographs of the wreck at heights of 1,000, 750, and 400 ft., and even lower if possible.



Mr. Stanley Adams bringing a passenger home in the "Waterhen," under her own power, on Lake Windermere. This hydro-biplane, with the exception of the propeller, which is an Avro, and the 50-h.p. Gnome engine, has been entirely designed and constructed at Lake Windermere by the Lakes Flying Co., of which Mr. E. W. Wakefield is the moving spirit.

THE Ae.C.F. GRAND PRIX.

IN our last issue we mentioned that several of the entrants in the Grand Prix race of the Aero Club of France had made their way to Angers by way of the air, and, in addition, Audemars, on the 13th, arrived on his Blériot. A good many others also arrived during the day, but they had recourse to the railway. One or two were out for trials, Garros being up for two hours and a-half on his Blériot,

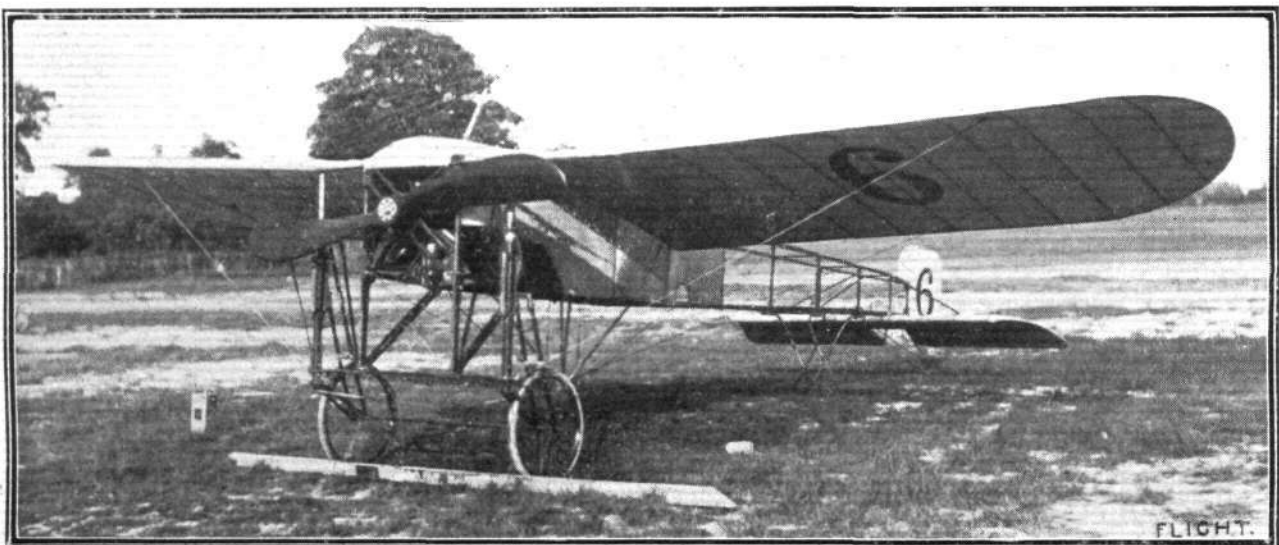


ANJOU CIRCUIT.—Garros being congratulated by M. J. Balsan (President of the Association Generale Aeronautique) upon his victory on the Blériot in the great French aerial race. Behind Garros, in the check cap, is M. Louis Blériot.

while Brindejone des Moulinais and Bedel, on their Moranes, made two two-hour flights over the country between Angers and Cholet. During the evening Labouret made a trial on his Astra biplane for the purpose of testing out his Renault motor. Some disappointment was caused by the announcement that the Sommer machines had been scratched, this step having been decided upon as the result of Kimmerling's accident. On the following day Renaux arrived on his Maurice Farman machine, and the question was raised as to whether

he could start, as he had arrived after the latest time given for the reception of machines. The sealing of the various parts stipulated in the rules was carried out during this and the following days. Several, in spite of the gusty weather, ventured out on Saturday morning for trials, and one or two, notably Divetain on the Ladougue monoplane and Gobe on the Nieuport came to grief. Vidart and Perreyon were flying in the evening over Angers, and Hamel made a round of the course, while Garros was also out. The petition for making the hour of starting earlier produced no result, so that the hour of nine o'clock Sunday morning remained unchanged, when Vadrines on his Deperdussin was down to lead the way. The promoters, however, were not favoured by the weather, and during the morning a veritable gale was blowing. In spite of this it was decided to go through with the race, although an agreement was reached between several of the entrants not to start unless conditions improved. At 9 o'clock everything was ready, and punctually to his schedule time—9.6—Garros started. Ten minutes later Bedel started on his Morane, but did not get clear of the aerodrome. He was followed punctually at 9.20 by the latest Zens monoplane with Legagneux as pilot and his inseparable friend Martinet in the passenger's seat. Then two Nieuports in charge of Espanet and Helen respectively got away at 9.46 and 9.50, followed by Hamel at 9.56 on his Blériot with Mr. E. V. Sassoon as passenger. The first to complete the round of 157.4 kiloms. was Espanet on the Nieuport, he having taken 1h. 48m. 48s. actual time for the round, although through starting late his official time was 2h. 6m. 48s., which was reduced to 1h. 45m. 40s. by the bonus for carrying a passenger. He was followed by Garros and Hamel, the former's time being 2h. 39m. 38s., and the latter's 2h. 23m. 53s., reduced to 1h. 59m. 55s. by the passenger bonus. It was not until after the latter's arrival that Brindejone des Moulinais started off for his first round on Bobba's Morane. During the first round Garros landed at Cholet, but the others flew on. Some disappointment was caused when it was heard that Helen was down with a broken valve and had landed at Doue-la-Fontaine. To add to the hardship of the pilots rain began to pour down, and Garros on landing said that he had to descend several times in order to find out where he was. The only other starter—Legagneux—was brought down between Pin-au-Meauges and Beaupreau, and in a bad landing both pilot and passenger were injured. The times of those who finished the first round are given in our table.

Hamel had been somewhat distressed by air-sickness on the first round, and although he officially started for the second lap, he landed just outside of the aerodrome at Cholet and there gave up. On the second round Garros made a stop at Saumur. Espanet had trouble at Cholet, and although at first it was not thought to be serious, he did not go on. Apart from Garros, who arrived back at Angers after completing his second round at thirteen minutes past three, the only competitor to complete the second lap was Brindejone des Moulinais, who took some thirty-nine minutes longer than Garros for the round. Three minutes after his official time for starting, which allowed for a compulsory half-hour's rest, Garros got away on his third circuit at a quarter to four, and finished at just on three minutes past six. Six minutes later Brindejone started off for his third round, and the keenest disappointment was evinced when half-past seven, the official closing time, arrived with no sign of him. A few



The Blériot monoplane of M. Garros upon which he won the Anjou Circuit.

seconds later the sound of a Gnome engine was distinguishable, and at 7.34 Brindejone landed only to find that he was disqualified, having arrived just four minutes after the control had been officially closed. Garros was thus the only one qualified for the full distance of three circuits 472·233 kiloms., and, therefore, eligible to continue the race on the following day. In the afternoon while Garros was making his third circuit quite a lot of flying was seen at the Avrille aerodrome at Angers, Bobba and Tabuteau on Moranes and Labouret on an Astra with two passengers, Fischer on a Henry Farman, Moineau on a Breguet, Allard on a Caudron with three passengers, Bielovucie on a Hanriot, Tholozan on a Morane, Gobe on a Nieuport, and Astley on a R.E.P., all making flights. During this time news of Garros was anxiously awaited, and when soon after six the hum of a Gnome engine was heard a great shout of Garros! Garros! arose, the pilot having a great reception on his descent.

As only this one competitor was qualified to take part on the second day it was decided that the second and following prizes should be utilised for a new event to consist of three rounds of the course; the first prize to be 25,000 francs; second, 10,000 francs; third, 7,500 francs; fourth, 5,000 francs; fifth, 2,500 francs. Garros besides continuing his "walk over" for the Grand Prix, for which he had to fly four rounds, was also declared eligible for the other prizes.

The Second Day.

The racing re-started at 9 o'clock on Monday morning, and punctually to time Garros set out on his "walk over" for the Grand Prix. He was followed at short intervals by Bobba, Bedel and Tholozan on Moranes, Frey (Hanriot), Gaubert and Labouret on Astras, Debroutelle (Zodiac), Espanet (Nieuport), Fischer (Henry Farman), Gobe (Nieuport), Allard (Caudron), Divetain (Ladougne), Brindejone (Morane), Bielovucie (Hanriot), for the special race. Bobba was the first man back, followed by Bedel and Garros, the latter having taken 1 hour 47 mins. for the round. Five of the other starters succeeded in finishing, Fischer being classed first on account of a passenger bonus, Bobba taking second place and Brindejone third. Of those who fell by the way, Bielovucie was brought down suddenly at Blaizon, an islet near St. Mathieu, by motor trouble, and was badly bruised and shaken, while the machine was smashed. After about a quarter of an hour's rest the start for the second lap was made, Bobba setting off at 10.49, Garros at 11.4, followed at short intervals by Bedel, Brindejone, Labouret, Fischer, Espanet, and Gaubert. All of these succeeded in completing the second round, but Labouret damaged his chassis in landing, and so could not go on. In the third round, Fischer who was running Espanet very close up, was put out of the race through a bad landing, while Bedel had to come down at La Forest-sur-Sevres, and damaged his chassis so much that he could not continue. This left five in, and the winner in the first prize was found in Espanet with Bobba second, Brindejone third, Garros fourth, and Gaubert fifth. The special event being over, Garros still had to go on for the last round of the Grand Prix, which he finished at 5h. 54m. 6s. Immediately on his landing he was carried to the Grand Stand, where he was congratulated by M. Besnard in the name of the Government, followed by hearty greeting from Espanet and the officials of the meeting. In returning thanks Garros said that he

would present the machine on which he had secured victory to the Army. In this connection it may be pointed out that the machine which won the Grand Prix was not in any way a special racing machine, but was of ordinary stock pattern, which makes the performance all the more meritorious. That the machine literally had to fight its way round the course on the first day is shown by the times taken compared with those for the second day. Not only did Garros win the Grand Prix of 50,000 francs, but also the speed prize of 20,000 francs and the fourth "consolation" prize of 5,000 francs on the second day, a total of 75,000 francs (£3,000).

Grand Prix.—Times.

FIRST DAY.

First round (157·411 kiloms.).

	Starting time.						Elapsed time.					
	Official.			Actual.			Return.			Official.		
Espanet...	9	28	0	9	46	0	11	34	48	2	6	48
Hamel ...	9	48	0	9	56	0	12	11	53	2	23	53
Garros ...	9	6	0	9	6	0	11	45	38	2	39	38
Brindejone des Moulinais	9	44	0	12	18	55	1	52	7	4	8	71

Second round (314·822 kiloms.).

Garros ...	12	15	38	12	0	43	3	12	56	2	57	18
Espanet ..	12	4	46	1	5	0	—	—	—	—	—	—
Brindejone des Moulinais	2	22	7	2	59	0	5	38	42	3	16	35

Third round (472·233 kiloms.).

Garros ...	3	42	56	0	3	45	6	2	58	2	20	2
Brindejone des Moulinais	6	8	42	0	5	45	7	34	0	1	49	0

SECOND DAY.

Fourth round (629·644 kiloms.).

Garros ...	9	0	0	9	0	0	10	48	52	—	—	1
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Fifth round (787·055 kiloms.).

Garros ...	—	—	—	11	4	0	12	52	13	—	—	1
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Sixth round (944·466 kiloms.).

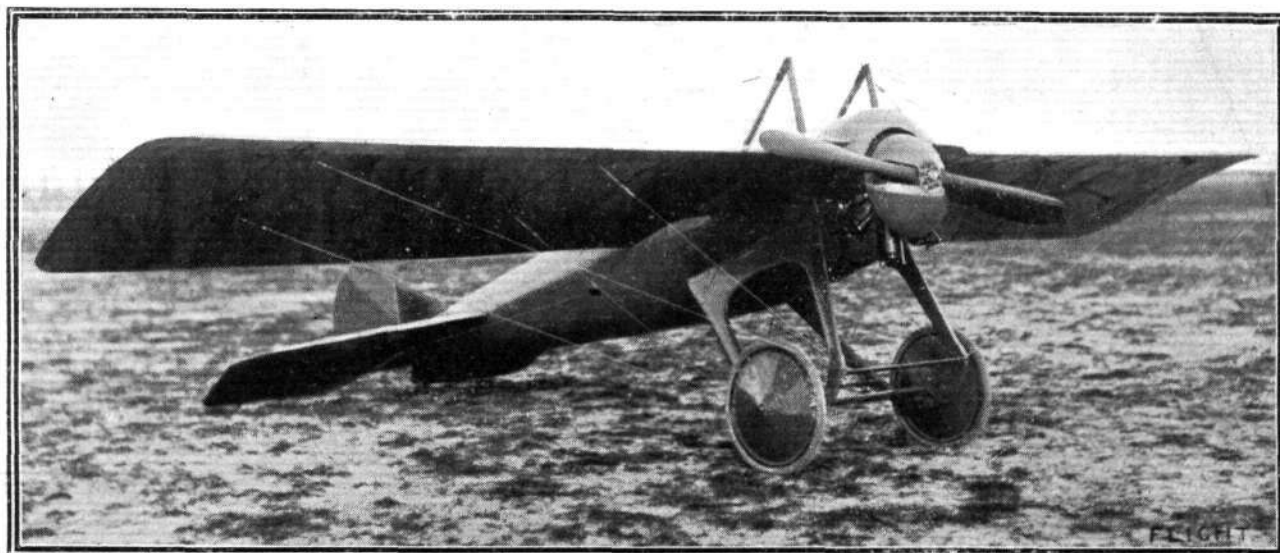
Garros ...	—	—	—	1	22	0	3	42	25	—	—	2
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Seventh round (1,101·877 kiloms.).

Garros ...	—	—	—	4	3	0	5	54	6	—	—	1
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Consolation Prize (three rounds).

	Official Time.			Actual Time.		
	h.	m.	s.	h.	m.	s.
1. Espanet (Nieuport) ...	4	4	56	4	54	53
2. Bobba (Morane) ...	4	21	41	4	21	41
3. Brindejone (Morane) ...	4	32	20	4	32	20
4. Garros (Blériot) ...	5	53	41	5	53	41
5. Gaubert (Astra) ...	6	40	53	8	32	40



The latest form of the Deperdussin monoplane, as seen at the Anjou Circuit. Note the special shield over the engine and the substantial chassis.

FOREIGN AVIATION NEWS.

The All-Weather Farman.

AFTER leaving one of his machines outside in the open air, unprotected from the elements, for three weeks, Maurice Farman on the 14th inst., by way of testing what effect this exposure had had, was flying for an hour and a-half with a passenger, but did not notice any difference in the flying qualities. The motor and propeller have been protected by a leather hood, and the wheels released so that the machine rested on the skids, but otherwise it was quite exposed, and was simply corded down at night.

French Navy Receives First Hydro-Aeroplane.

THE Voisin Canard ordered by the French Navy, having fulfilled its official tests at Frejus, has been accepted by Commandant Fatou. The tests were carried out on the 12th inst. from the mother ship, "Foudre," and several times the machine was embarked and disembarked in less than three minutes. Naval Lieut. Cayla has been trained to pilot the machine.

A Caudron Superior Pilot.

SAPPER JACQUEMART completed his tests for a French superior military certificate on Monday week, flying over a course—Crotoy-Douai-Arras and back on his Caudron biplane. On the 8th inst., he flew over Crotoy, Berek, Rue, Noyelles, Abbeville and back.

A French Officer Pays a Round of Visits.

ON the 14th inst., Lieut. Vergnette, on his Borel monoplane, left Buc with the intention of making a number of calls. His first stop was at Chartres, the 65 kiloms. being covered in half an hour. From there he went on to Voves, and then after a call on the Mayor proceeded to Orleans, covering 40 kiloms. in 18 mins. After lunch a visit was paid to Etampes for *servir la main* of several comrades, and he finished up the day's work by flying back to Buc, so accomplishing a round trip of about 250 kiloms.

Two Hours on a Farman.

AT Etampes on the 11th inst., Montoussis, by way of training for his superior *brevet*, made a non-stop flight of two hours on his Henry Farman machine. Brodin and Adamidis are also training for a superior certificate. The Italian officers at the Farman School are making splendid progress and should soon qualify for certificates.

An Escadrille at Work.

ON the 12th inst. an escadrille of three Blériot monoplanes, piloted by Lieut. Bellemois, La Morlaye, and Boucher respectively, carried out scouting operations between Artenay and Toury, in connection with the manoeuvres of the troops at the Orleans garrison.

More Borels for French Army.

BEFORE a military commission at Buc on the 12th inst., Ehrmann and Chambenois carried out official tests with three Borel monoplanes before handing them over to the French army. With one, fitted with a 50-h.p. motor, and carrying a useful load of 180 kilogs. Chambenois rose 300 metres in 3½ mins.

Fast Work on a Savary.

FRANTZ, on a Savary biplane, paid a visit to Orleans on the 12th inst. and made the trip from Chartres in 33 minutes, the speed attained being about 138 kiloms. an hour.

French Navy and Curtiss "Triad."

HAVING been invited by the French navy to demonstrate the Curtiss "Triad," Paulhan on the 11th inst. flew on it from Juan-les-Pins to Frejus in 25 minutes. He then circled over the aeroplane mother ship "Foudre" before alighting alongside, and his machine was subsequently hoisted on board for the night.

Inspecting suggested French Military Aerodromes.

IT having been suggested that a military aviation centre should be established at Jarville, Lieut. Nicaud and Sapper Frangeoy on their Farman machines flew over on the 11th inst., making the trip from Verdun in 1 hr. 10 min. After inspecting various grounds available they went on to Nancy and made a half-hour's flight.

Cross-Country Flying on Nieuports.

AFTER only eleven lessons on his Nieuport monoplane, Boutmy on the 13th inst. took a passenger from Rheims to Mourmelon and back while another pupil Rolane, covered the circuit Mourmelon-Rheims-Dorman and back.

Mr. Huck's French Cross-Country Trip.

HAVING taken delivery of his new 70-h.p. Blériot monoplane at Issy, Mr. Harold Barlow decided that it was only proper that it should come to London under its own power. With Mr. B. C. Hucks in the pilot's seat and the owner as passenger, Issy was left at 9.17 on Monday morning and Hardelet, near Boulogne, reached at 11.37, the distance of 160 miles having taken 2 hrs. 20 mins. There was a 40-mile wind blowing and it was then decided to postpone the cross-Channel trip. The Channel was crossed on Wednesday, a stop being made at Eastchurch en route to Hendon.

Two Hours on a Dep.

AT the Deperdussin military school near Rheims on Monday, Lieut. Lalanne made a flight of two hours, attaining a height of 2,500 metres, and landing by a spiral *vol plané*. Sergeant Verdier, also on a Dep. made a trial of three-quarters of an hour's duration.

At the R.E.P. School.

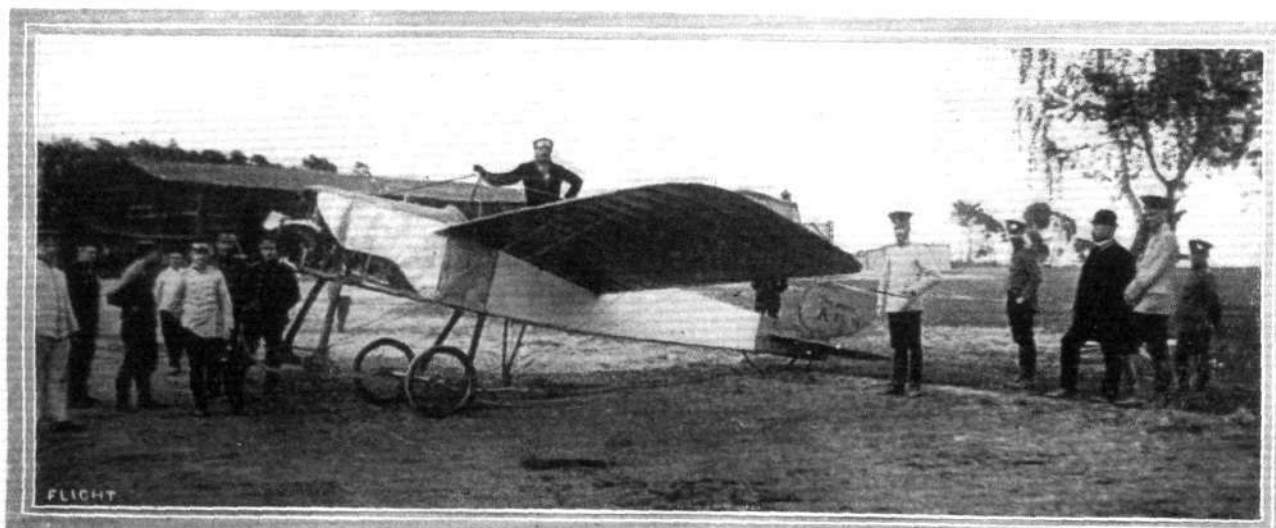
ON Monday, Lieut. Precardin on a military R.E.P. made a trip of an hour, and was afterwards flying over Versailles. Lieut. Campagne paid a visit to Rambouillet, and Lieut. Bruguiere went to the La Boullie golf links. Lieut. Precardin was also up for an hour on the 14th inst., and Lieut. Bruguiere was flying over Chateaufort, Guyancourt and Toussus-le-Noble.

Olieslaegers Tries a Biplane.

OLIESLAEGERS, the well-known Belgian monoplane pilot, has just taken delivery of a Farman biplane. On Monday he made several trials with it at Etampes, both with and without passengers.

Good Flying at Pau.

ALTHOUGH the civilian pilots have deserted Pau, the military pupils still put up plenty of flying when occasion offers. At the Blériot school, on Monday, Lieut. Adam-Gironne was up to a height of 1,500 metres, and Laurent went over Pau at a similar altitude, while Deneau, on taking delivery of a new machine, flew on it for an hour. On the 12th inst. Lieut. Massol and Sergeant Laurent, on their Blériots, went over to Tarbes, while Lieut. Malherbe paid a visit to Lourdes. Laurent made an hour's flight on the 13th inst. in the direction of Tarbes.



BRITISH AEROPLANES ON THE CONTINENT.—A two-seater Bristol monoplane in Germany in charge of Mr. Jullerot.

Good Work with the Train.

DEROME, chief pilot at the Train military school at Mourmelon, made a flight of an hour on Monday, flying across country in the direction of Chalons. On the 12th, Lieut. Levassor was up for an hour and a-half flying over Chalons and Suippes. On his latest monoplane, Train was flying at a height of 400 metres with three persons on board.

Doings at Hanriot School.

THE Italian officers are making splendid progress and will soon be ready to qualify for their certificates. On Monday Guillemain, at the civilian school, was flying for an hour.

Pupils to Honour Wilbur Wright's Memory.

A NUMBER of pilots, headed by Count Lambert and Tissander, taught by the late Wilbur Wright in France, met at the French Aero Club the other day and decided to honour their master's memory by having a bust of him put up in the club-house.

The Cause of Kimmerling's Death.

THE Military Commission which has enquired into the cause of the death of Kimmerling and his passenger Tonnet has come to the conclusion that the accident was caused by one of the warping wires giving way when the Sommer monoplane was at a height of 50 metres, followed by the breaking of a second cable, when the machine was about ten metres from the ground, thus allowing the wing to collapse. The cable was tested to a stress of 2,500 kilograms, and must have broken through some fault in the material.

Speed Records Beaten.

AT Milan last week Cobioni on a Caproni monoplane, fitted with a 50-60-h.p. Anzani engine beat the world's passenger speed record, being timed to do 114 k.p.h. Subsequently the same machine showed a speed of 130 k.p.h.

Austria Buying More Aeroplanes.

AN order for 14 monoplanes, intended for the use of the military, has just been placed by the Austrian Government with the Etrich firm.

Cross-country Flying in Switzerland.

ON the 11th inst. Maffei succeeded in winning the prize of 1,200 francs offered by the eastern section of the Swiss Aero Club for a flight from Zurich to Lucerne and back. The outward journey only took 30 mins., but owing to the very strong wind it took the aviator an hour to get back.

Another Lady Pilot Killed.

ACCORDING to a cable from Springfield, Illinois, Miss Julia Clark, who, as we mentioned last week, qualified for a pilot's certificate on May 19th, after a three months' course at the Curtiss school at San Diego, Cal., was killed in a fall caused by the planes of her machine being caught in the branches of a tree. It is generally stated that Miss Clark was the flying name adopted by Mrs. James V. Martin, who, it will be remembered, as Miss Irvine, learnt to fly at the Grahame-White school at Hendon, and married Mr. Martin, the Harvard aviator, leaving for America before qualifying for her certificate.

Two Deaths in America.

WHILE flying one of the latest type Wright machines at College Park, Maryland, on the 12th inst., Lieut. Hazellhurst and his passenger Lieut. Welsh fell from a height of 75 ft. and were instantly killed. It is said that the officers were practising for height records, and got into trouble through an air pocket.

✱ ✱ ✱ AIRSHIP NEWS.

Mishap with the "Gamma."

THE programme for the review of the troops at Aldershot on the 14th in honour of the King's birthday, included a cruise by the airship "Gamma." Unfortunately, when being brought out of her shed, the dirigible was caught by the wind and had to be suddenly deflated. The envelope fell on to some railing and was torn, but otherwise little damage was done.

Airship Altitude Record Beaten.

ON Tuesday, with six persons on board, the new Astra dirigible "Conte" succeeded in beating the height record for airships of 2,900 metres recently set up by the "Clement-Bayard" airship. Starting from Issy the dirigible circled over Paris, steadily rising until the barographs recorded a height of 3,025 metres (9,831 ft.).

The French Gordon Bennett Balloon Team.

FOR the Gordon Bennett balloon race the Aero Club of France has now finally nominated, as representatives, MM. Leblanc, Bienaime and Blanchet, with M. Pierron as reserve.

A Mishap with "Zeppelin III."

"ZEPPELIN III," the new military dirigible, which recently cruised from Friedrichshafen to Hamburg and back, was very nearly destroyed by fire at the Zeppelin works on Monday. The ballonets were being emptied as preliminary to an inspection by a military commission when, from some unexplained reason, there was an explosion of gas, and although the full extent of the damage is not ascertainable, it would appear that about half the airship was seriously damaged by fire, thus placing it out of commission for some weeks.

The "Victoria Louise" over Holland.

THE Zeppelin liner "Victoria Louise" made a very fine cruise on Tuesday from Dusseldorf to Hamburg during the course of the trip of 350 miles, making a detour over Amsterdam, Nordeney, then by Heligoland across to the Elbe, saluting the Kaiser, who was on the Royal Yacht, "Hohenzollern," at the Lower Elbe Regatta. The airship carried a crew of twenty men and five passengers, and took twelve hours for the trip, Dusseldorf being left at 4.40 a.m., while Hamburg was reached at 4.45 p.m.

Night Cruise by "Z 2."

ACCORDING to orders received, the "Z 2" left Cologne at 1.30 a.m., and followed the valley of the Rhine to Mannheim. There she met the dirigible "Schutte Lanz," and after cruising in the neighbourhood for an hour went on to Darmstadt, Mayence, Coblenz, Bonn, and returned to Cologne at 10 o'clock. During the period of the cruise the airship was in wireless communication with four fortresses.

Long Trial by "Schutte Lanz."

REPAIRS having been executed, the dirigible "Schutte Lanz" was given an extended trial on the 8th inst. Leaving Mannheim at 5 o'clock, she was steered along the Rhine to Wiesbaden, Frankfurt, Darmstadt, and Worms. Returning at the latter point she went back to Mannheim, and arrived there safely after being in the air over five hours, during which 260 kiloms. were covered.

Mishap with the "Victoria Louise."

ON the 13th inst., at Dusseldorf, after the Zeppelin airship, "Victoria Louise" had carried out her usual daily cruise she was damaged by being blown against the shed. Fortunately, the repairs were easily carried out, so that the airship was not long in dock. Two days previously she had made a trip from Dusseldorf to Munster, and then changing her passengers made a round trip to Osnabruck and back, afterwards returning to Dusseldorf. During the day forty-five persons were carried by the airship.



THE LATEST MILITARY 3-SEATER HANRIOT MONO.—Bielovucic is in the pilot's seat, and in front are Marcel Guillemain and Sydney V. Sippe.

THE AERO ENGINE.

By G. H. CHALLENGER. (Continued from page 548.)

Weight and Strength—For simplicity the powers developed have been assumed as proportional to the volumes of mixture supplied, *i.e.*, that the thermal efficiencies are the same—reference to tests 9, 10 and 11, Table III, will show that they will not be widely different. In the last three items dealing with weights, it has been assumed that the strength and weights of all parts of the motor could be cut down in the proportion of maximum pressures. This would obviously not be practicable. Carburettors, induction pipes, magneto, plugs, valves, cam-shaft and gears, &c., would be a constant quantity in both cases. The small massic power ratio shown by the low compression engine without forced feed is due to the fact that all parts would have to be sufficiently strong to withstand the maximum explosion pressures at lower piston speeds when the ratio of mixture at atmospheric pressure to the volume swept by the piston is nearer unity (see Table V).

Propagation of Flame.—The combustion of mixture is not instantaneous at the moment of ignition; a fraction of time intervenes from the instant of ignition to the instant of attainment of maximum pressure. The time of combustion is controlled by dilution compression and temperature as well as the rate of compression and the mode of firing. The influence of dilution without previous compression can be seen by Table VII which gives experimental results obtained by Mr. Dugald Clerk with mixtures of Glasgow gas exploded at constant volume in a closed vessel.

TABLE VII.

Mixtures.	Time of Explosion.	Gauge Pressure.	Computed Temperature. ° F.
1 volume gas to 13 volumes air ...	0.28	52	1,916
1 " " 11 " " ...	0.18	63	2,309
1 " " 9 " " ...	0.13	69	2,523
1 " " 7 " " ...	0.07	89	3,236
1 " " 5 " " ...	0.05	96	3,484

The results taken from Hiscox, of some experiments made in France to determine the influence of the rate of compression on the time of complete combustion are given in Table VIII.

TABLE VIII.

Mixture.	Time of Explosion.	Piston Speed.	Computed Work from Diagram.
1 volume coal gas to 9.4 volumes air ('1093 cubic ft. mixture)	.53	1.181	70.8
	.40	1.64	85.3
	.25	3.01	105.5
	.16	4.55	125.8
1 volume coal gas to 6.33 volumes air ('073 cubic ft. mixture)...	.15	5.57	127.2
	.09	9.51	289.9
	.06	14.1	364.4

Combustion and Piston Speed.—The piston speed in feet per minute is obtained by multiplying the number of strokes per minute by the length of stroke in feet. The time of combustion at high piston speed is of great interest. Professor Callendar made some interesting experiments in 1904 with a small motor cycle engine, 60 bore by 70 stroke. A diagram taken at 2,430 revolutions per minute running light with a weak mixture showed that the suction on the induction stroke was between 7 and 8 lbs., and that the piston had travelled through half the compression stroke before the mixture reached atmospheric pressure. Ignition took place at about nine-tenths of the compression stroke, but the combustion was not complete until the piston was about half way down the explosion stroke, although the times occupied in complete combustion was only about $\frac{1}{100}$ th of a second. The maximum explosion pressure attained (47 lbs.) was very little more than the pressure due to compression. The explosion did not take place with sufficient rapidity to maintain the pressure in the increasing space created by the rapid movement of the piston, with the curious result that actually during the explosion the pressure was diminishing.

Expansion.—Expansion of mixture during combustion lengthens the time required. Compression during combustion diminishes the time required. It will be seen that if advantage is to be taken of the diminished time of combustion during compression, ignition has to take place during the compression stroke, and the increasing rise of pressure due to the explosion will exert an effect in opposition to the rotation of the motor. Too much advance of ignition shows itself in loss of power and with a rich mixture in knocking due to high rate of combustion.

Ignition Experiments.—In some ignition experiments carried out by Professor Watson some interesting results were obtained.

A motor was run at 1,000 r.p.m. with a full mixture and the spark advanced as much as advisable, *i.e.*, when no knock could be distinguished—the i.h.p. was 2.36. The extra air valve of the carburettor was afterwards opened as far as possible and the ignition further advanced to allow for the slower burning of the weak mixture—the i.h.p. at 1,000 r.p.m. was 2.76, an increase of nearly 17 per cent. in power.

The actual time of combustion was approximately the same in each case; $\frac{1}{100}$ sec. for a piston speed of 660 f.p.m. practically the whole of the combustion of the rich mixture taking place during expansion, and in the weak mixture the greater portion of combustion taking place during compression. The former attained a maximum pressure of about 105 lbs. per sq. in. when the piston had travelled 0.21 of its explosion stroke, whilst the latter showed a maximum of about 151 lbs per sq. in. when the piston had travelled 0.06 of its explosion stroke, the power lost in compressing the mixture during part of the time of combustion being more than retrieved by the higher mean pressure during the explosion stroke.

Time for Combustion.—A little consideration will show that the quicker the combustion of a given mixture the higher the efficiency because if the ignition has to be advanced to ignite during the compression stroke, the combustion exerts a back pressure on the piston and if the ignition is retarded to fire on dead centre, combustion taken place during expansion necessitating an increased time with consequent decrease in the mean pressure available for useful work. Maximum efficiency would be obtained if combustion was instantaneous upon ignition.

The time required for complete combustion governs to a large extent the efficiency of the cycle and this is particularly accentuated with increase in revolution speed and consequently piston speed since they are so intimately interconnected.

Piston Velocities.—The term piston-speed represents an average of the varying velocities of the piston in performing its strokes. Actually the velocity of the piston at dead centre is zero. From 0° to 90° of the crank pin (neglecting the effect of obliquity of the connecting rod) the velocity increases with diminishing acceleration per second per second until the maximum velocity is reached at 90°, where the acceleration per second per second is zero. From 90° to 180° the piston velocity decreases with increasing retardation per second per second until at 180° the piston velocity is again zero.

An average piston speed of 1,260 ft. per minute in a motor of 160 mm. stroke running at 1,200 r.p.m. means that the piston is stationary for an instant of time on dead centres, whilst a maximum velocity of 1,978 ft. per minute is attained at mid-stroke. The piston velocity at any instant can be obtained from the formula $V = \pi L n \sin \alpha$.

where V = velocity in feet per minute,
 L = stroke in feet,
 n = revolutions per minute,
 α = angle of crank-pin.

Table IX has been prepared to show the effect of varying piston velocity on the volume swept by the piston during equal increments of time, taking the total volume as unity and the angular velocity of the crank-pin as being uniform.

The fractions of volume swept have been calculated from the formula $\frac{\text{versin } \alpha - \text{versin } \beta}{2} = \text{volume}$.

Figures for 0° to 90° only are given, from 90° to 180° the volumes swept would be simply reversed.

(To be concluded.)



The Berlin-Vienna Flight.

To Hirth is the honour of being the only competitor to complete the journey between Berlin and Vienna within the time limit which expired on June 12th. Bergmann, who is Lieut. Muller in real life, succeeded in flying on from Breslau, but had to land at Troppau, while Krieger, who had arrived at Breslau, deemed it inadvisable to go on in view of the treacherous weather. Lieut. Blaschke, who left Breslau on the 11th inst., only succeeded in getting as far as Gaenserndorff, where he made a bad landing and was compelled to give up.

An Aerial Mail in Japan.

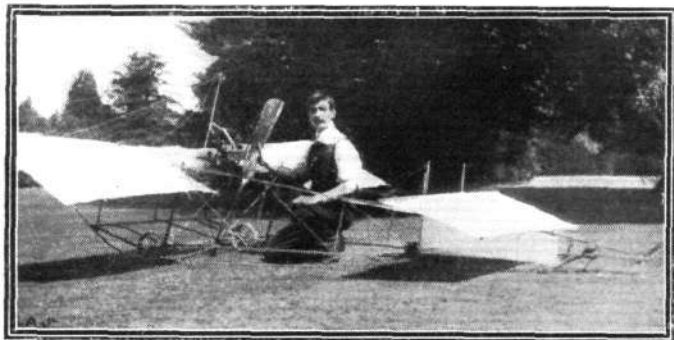
FLYING on his hydro-aeroplane, Mr. W. B. Atwater, on June 1st, carried a bag of mails as well as a letter from the Mayor of Tokio to the Mayor of Yokohama between these two places, a distance of twenty miles. He intends to better this performance by flying between Japan and Korea.

Models

Conducted by V. E. JOHNSON, M.A.

Petrol-Engined Models.

Mr. F. Mayer (Messrs. J. Bonn and Co.) writes us as follows re the above:—"I notice in your article in FLIGHT, June 8th, under the heading 'Models,' an enquiry re petrol-engined models. Having built a number of these large models, and having had considerable experience and success with them, I may be able to advise your correspondent. I recently built and flew a model monoplane fitted with a $1\frac{1}{2}$ -h.p. engine (see illustration). It was of the O-I-P-I type. I have not the exact dimensions before me, but from memory they are:—Span 13 ft., chord 3 ft., tail plane 5 ft. 6 ins. by 2 ft. 6 ins., overall length of model 13 ft. 6 ins. Various types and sizes of propellers have been used, the one in photo is 40 ins. diameter by



A $1\frac{1}{2}$ -h.p. petrol-engined model and its constructor, Mr. F. Mayer.

30 ins. pitch, turning at about 1,000 r.p.m. Weight of complete machine as shown, 41 lbs. This propeller gives a thrust of $14\frac{1}{2}$ lbs. (static). Flying speed 20 to 23 m.p.h. Your correspondent does not state what part he wishes to make of 1 in. sq. wood. I use silver spruce in the following sizes:—1 in. sq. for most parts of the under carriage, $\frac{1}{2}$ in. sq. for fuselage, $\frac{3}{4}$ in. sq. for front main spar of wings, $\frac{1}{2}$ in. by $\frac{3}{4}$ in. for rear spar, the ribs are steamed from $\frac{3}{8}$ in. by $\frac{1}{4}$ in. The tail-plane is made of $\frac{1}{2}$ in. by $\frac{1}{2}$ in., front spar $\frac{3}{4}$ in. by $\frac{1}{4}$ in., rear spar $\frac{3}{8}$ in. by $\frac{1}{4}$ in. ribs. Two vertical fins are fitted below tail. Fittings, wood, propeller, &c., can be had from Messrs. J. Bonn and Co., who make a speciality of large models. Any further particulars I should be pleased to give, and a letter addressed to me at the above firm will receive attention."

British Model Firms and Coming Competitions.

Mr. R. R. Drake (Llanberis, Curtis Road, Hornchurch) in a letter referring to the above subject says: "I happen to be in a position to endorse your remarks in FLIGHT, June 8th issue—particularly your statement as to the attitude of the more leisured classes towards the ordinary type model. Although not exactly a firm, my whole time is occupied in executing the special orders of the largest retailers in the kingdom for model aeroplanes, and of late I have noticed that although orders for models which rise from the ground and hydro-aeroplanes have been plentiful, not one for an ordinary type of model has been received [Mr. Drake means, we presume, the flying stick type]. Moreover, these models have been ordered by the very class of people you mention—being mostly for sons of titled or well-known persons."

Mr. Drake also incidentally mentions that he is placing on the market a model hydro-aeroplane which has been successfully tested against those of French origin and has, moreover, the advantage of being considerably cheaper.

Messrs. T. W. K. Clarke's Hydro-Aeroplane Floats.

We have just received from this well-known firm some samples of their new floats. The fact that they are issued by this firm is really a sufficient guarantee without any further recommendation from us. The only fault that we can find with them is that we think they are too good for the price—but that is not likely to be a drawback so far as purchasers are concerned. We propose next week dealing with the subject of model hydro-aeroplanes, in connection with which we have recently been making a number of experiments, and will refer more fully to them then. In the meantime anyone already experimenting, or about to do so, cannot do better than purchase a set.

Flight by Human Energy.

Mr. Charles J. Reynolds, referring to Mr. Stoddart's experiments (FLIGHT, June 1st issue), says: "Mr. Stoddart thinks it possible to construct a machine by the aid of which it would be possible for a man to fly without the aid of any additional power beyond that afforded by the man's own muscular exertion. To my mind the answer is in the negative, and emphatically so, for this reason, that no man eats enough. For it is a physiological fact the better the [flapping] flight the larger the appetite, and that in nature any creature that flies has an enormous appetite in comparison with those that do not rise from the earth. Many birds habitually eat more than their own weight of food per diem, and this is only what is to be expected when we consider the enormous energy required to lift and maintain a living body in sustained flight in the air in comparison with that required for mere locomotion on the ground."

Muscular energy is solely derived from the food consumed, and it therefore follows that the greater energy required to be exerted by flying creatures is made possible to them by nature in providing them not only with enormous appetites but with the power to assimilate the food devoured in a given time."

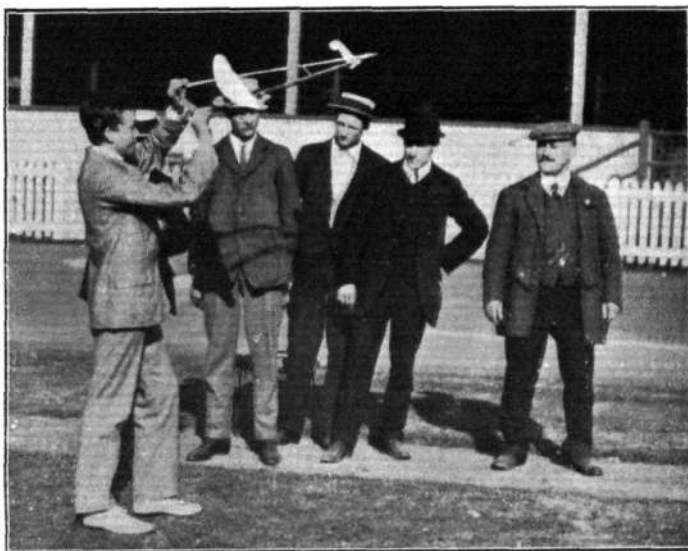
Tails on Model Nieuports.

Mr. J. W. Burghope, in reference to our query in June 8th issue, writes us as follows: "At first the model was a trifle tail-heavy (tail non-lifting), and the model landed tail down. The skid was then loaded with small pieces of lead, leaving the tail still non-lifting. It then glided and landed at gliding angle, i.e., nose rather down, C.P. of whole machine coinciding with C.P. of wings. This had a bad effect on the skid; which was then unloaded, and the tail was made to lift by bending the tail-flaps down a trifle; this kept the tail well up in flight, and when the motor had run out the model glided, gradually flattening out and losing way until it either pancaked or landed tail down, according to wind, altitude, &c. The point being that the model glides whether the tail lifts or not, but with a lifting tail the glide flattens out to a pancake."

A depressing tail was also tried, the flaps being bent up, with the result that the machine switchbacked very badly, landing at an angle from 1 in 2 to 1 in 1, which did not improve the skid. The tail is, however, even now only "slightly" non-lifting. The gear-wheels are "level" and not "bevel." Mr. Burghope also states that he did not mean to convey the idea that he considers a very small tail is to be preferred—but the opposite. The model is now fitted with a new skid of hickory wood, and the copper Vs are now replaced by steel ones of the same weight.

Replies to Correspondents.

B. TRASK.—We shall be pleased to do as you suggest should it be possible to do so, but we are much pressed for space at present.



C. R. Ridley, winner of Model Engineer Challenge Cup and Silver Medal, June 8th, 1912.

S. FAULKNER.—At present the distance flown is very much too short for us to care to take the matter up in any way. When you can increase this to ten times its present amount *with like success in the open* we shall be pleased to go into the matter further. A balance weight and single plane were used years ago by Burge-Webb and others, and we have seen such models fly quite long distances, but such are certainly not to be *preferred* to the present type.

J. C. BALDEN.—We have used the same thing, but, as you say, it is no use on a commercial model. The floats on the French model were made of aluminium, cylindrical in shape, with hemispherical prows and flat stems, the whole cylinder set at a small angle of incidence, the principle being clearly one of great inefficiency and bad design. As stated elsewhere, we shall be writing on this subject next week.

W. ADAMS.—Not at present we are afraid. Later on very possibly something could be done as you suggest.

R. CARDIFF.—The original Fairey monoplane was almost exactly similar to the sketch you send. The fact that a broken monoplane should fly, as you say, 100 ft. at an altitude of 40 ft. is extremely interesting.

A. MOGREN.—“Flying and Some of its Mysteries” (advt. in these columns); “The Aeroplane,” 2s. 6d., Longmans, Green, and Co.; and “The Second Boy’s Book of Model Aeroplanes,” Century Co., New York, will, we think, supply everything you require. We will reply to your other query if you enclose a stamped and addressed envelope for reply; in any case do not purchase a cheap model.

ARNOLD HARDING.—The force from an ordinary gas jet will not be sufficient. You will find in “Flying and Some of its Mysteries” full and complete directions for doing this in a very simple manner, also much information *re* model dirigibles.

S. C. BAXTER.—Many thanks for your communication and photos, but Mr. Groves makes all his own models complete; the model of which you enclose photos would not be suitable for a power plant, every part of which is specially designed when using the latter. The very last thing required at the present moment is cheap models; owing to the natural difficulties of the problem everything to be truly efficient must be of the very best materials and workmanship. Really good model aeroplanes cannot and never will be produced cheaply. It is this very point which has caused so much trouble and disappointment in the past.

D. G. COLUNIS.—Part machined means part finished; probably the cylinders are bored, and possibly all the necessary turning done. You cannot do better than copy Mr. Burghope’s model. Probably from one to two pounds if rubber-driven; if steam or petrol-driven, from ten to fifteen pounds, or less, according to how far finished you require the parts to be.

J. S. HIGHAM.—A 14-ins. propeller would be about the size. Centrale type, if to rise off the ground. The Wright Brothers, in the true sense of the word.

Model Club for Urmston and District.

J. S. Higham (15, Stephen Street, Urmston), would be glad to see or hear from anyone interested in model-making, with a view to forming a club in that locality.

THE KITE AND MODEL AEROPLANE ASSOCIATION. OFFICIAL NOTICES.

British Model Records.

Hand-launched	Distance ...	G. Rowlands ...	429 yards.
	Duration ...	A. F. Houlberg ...	89 secs.
Off ground	Distance ...	H. R. Weston ...	26 yards.
	Duration ...	G. Rowlands ...	30 secs.

Registration of Model Aeroplane Performances for purpose of Establishing Records.—The official monthly trials were held on the 100-acre field, Greenford (by invitation of the Ealing Club), on Saturday, June 15th. The wind was most choppy and gusty, and not an ideal day for models, but some good flights were made, and rising off ground records established, which results show the effect of the wind.

The results were as follows:—Distance, hand-launched, 429 yards, G. Rowlands; distance, off ground, 26 yards, H. R. Weston; duration, hand-launched, 39 secs., H. R. Weston; 44 secs., R. F. Mann; duration, off ground, 30 secs., G. Rowlands. Others entered, but owing to the gusty wind were unable to make flights that were recordable. The observers were Messrs. C. R. Fairey, E. W. Twining, and W. H. Akehurst.

Next Official Trials.—The attention of modelists is called to the fact that the next trials will be held on Saturday, July 13th, on the seven fields, Grove Park, at the invitation of the Blackheath Aero Club, for all classes of models. These meetings are held monthly for the convenience of modelists in various parts of the London district. Full particulars of the nature of the tests, together with application form, can be had on application to the hon. sec.

Council Meeting.—A meeting of the Council was held on Thursday, June 13th, when there were present: Col. J. D. Fullerton, in the chair, Mr. T. W. K. Clarke, Mr. C. R. Fairey, Mr. V. E. Johnson, Mr. F. T. Pringuer, Mr. G. Rowlands, and W. H. Akehurst, hon. sec.

British Records.—Owing to the various advertisements in the aeronautical press of a misleading nature, thereby causing the Editors and the Association trouble, the following resolution was brought forward and passed, viz.:—

“That the attention of the Council of the Kite and Model Aeroplane Association having been called to the fact that certain advertisers in the aeronautical press are laying claim to records which have not been officially recognised, to the injury of the rightful holders of these records, they, the Council of the Kite and Model Aeroplane Association, which is the only body recognised by the

Royal Aero Club as governing model aeroplane performances in England, wish to state that the only authentic records are those made before observers officially appointed by them.”

These records will be published weekly.

The hon. sec. was instructed to write to the firms concerned asking them to refrain from publishing these misleading advertisements.

Letters from Blackheath Aero Club was read, and their invitation to the Association to hold their July trials on their ground was accepted with thanks. Should any other London club wish for the August trials application should be made at once.

Competitions.—All competitions fixed to be held on the National Aviation Ground, Harrow, will not take place there but on the 100-acre field, Greenford, Perivale Halt Station, G.W.R. *via* Westbourne Park. See second edition of programme.

The junior contest fixed for to-day, Saturday, has been postponed as there were not sufficient entries to justify the giving of cash prizes. This will be held on Saturday, August 24th, the date of the Junior Distance Competition which will give more time to build suitable models.

Model Competition to be held on the 100-acre field, Greenford, June 29th, at 3 o’clock. Competition for models rising from the ground under their own power. Open to all amateur-made models in the British Empire, and made of British material throughout. Free to members; non-members’ entrance fee, 2s. Entries close last post Saturday, June 22nd. Prizes: 1st, aeroplane requisites, value £2 (presented by Messrs. T. W. K. Clarke and Co.; 2nd, aeroplane requisites, value £1 (presented by Messrs. J. Bonn and Co.); 3rd, pair of (W.H.C.) laminated propellers (presented by the Weston Hurlin Co.).

Tests.—(a) Shortest run before rising. (b) Duration of flight (timed from time of starting till it lands or disappears from Judge’s view). Maximum marks, 100. 50 for each test.

Rules.—1. Competitors may submit models of any kind. 2. Models must not weigh less than 6 ozs. 3. Competitors must be at the Judges’ flag at 2.30 sharp to have machines numbered. Those not present at that time are liable to be disqualified. 4. Reasonable repairs will be allowed at the discretion of the judges. 5. Models may be released by hand or in any other manner. 6. Each competitor is entitled to three trials if time permits.

W. H. AKEHURST, Hon. Sec.

27, Victory Road, Wimbledon.

PROGRESS OF FLIGHT ABOUT THE COUNTRY.

Model Clubs: Name of District only given. In brackets: Secretary’s address.

Notes regarding Clubs must reach the Editor of FLIGHT, 44, St. Martin’s Lane, London, W.C., by first post Tuesday at latest.

Aero-Models Assoc. (N. Branch) (15, HIGHGATE AVENUE, N.).

SATURDAY’S contest at Finchley v. Palmer’s Green resulted in a win for A.M.A. 14.5 secs. to Palmer’s Green 12 secs. duration. Antimony Rose Bowl competition postponed to June 29th. Competition for duration, open to members, non-members 1s. fee. Palmer’s Green Ae.C. has united with this club, which gives

use of two flying grounds. Flying to-day, Saturday, at Finchley and Bowes Road, Palmer’s Green.

Birmingham Aero Club (8, FREDERICK ROAD, EDGBASTON).

At Billesley Farm, Messrs. A. F. MacManus and G. Wilde flying. Mr. Noble during week had flight of 150 yards, with tractor mono. rising from

ground. Exhibition flying to-day, St. Barnabas Fête, in Mr. Shuttlebottom's Field, Moor Green.

Blackheath Aero Club (48, HAFTON ROAD, CATFORD, S.E.).

SATURDAY, wind 30 m.p.h., but good flying at Grove Park, all machines smashed. Mr. Bailey's machine, fitted with arched gull's wing-plane, got best flight. Others flying, Mr. Dollittle, Mr. A. E. Woollard, Mr. Attwool, Mr. Waghorn, and Mr. Whitworth. July 13th, K. and M.A.A. registration trials at Grove Park.

Bristol Model Flying (3, ROYAL YORK CRESCENT, CLIFTON).

MEETING Zoological Gardens postponed. 40 models now entered for competition at G.C.C. Fête. The arrangements will be as under:—June 27th, 2.30 to 6.45 p.m., models on view—design and construction will be judged; 7 p.m., rising from ground and hand-launched events (35 entries). June 28th, 7 p.m., hydro-aeroplane competition (5 entries); 7.30 p.m., exhibition flights (open). Judges—Messrs. P. A. Thompson (B.Ae.C.) and O. R. Langley (late President, C.C.Ae.S.). Valuable prizes will be offered.

Croydon and District Aero Club (Sec., 158, HIGH STREET).

JUNE 9th, Dr. MacMunn's 4-ft. model (taken over five years to perfect) at first flight flew out of ground (4-mile long) cleared two roads and landed in main road on tramway, altogether about half-a-mile. Others flying, Messrs. Pell, Pavely, Roden, C. and H. Smither.

Dover and District ("OAKVILLE," GODWYNE ROAD, DOVER).

DEMONSTRATION and competitions, June 22nd, 4 p.m. on Northfall Meadow. Messrs. C. Grahame-White, Gustav Hamel and Jules Nardini have consented to be Vice-presidents of the club. Saturday afternoon Folkestone and Canterbury clubs will visit. Three competitions will be selected from altitude, speed, point-to-point, tractor, duration, and stability.

Ealing and District (1, QUEEN'S GARDENS, EALING, W.).

RESULTS of K. and M.A.A. record trials published elsewhere. During week Mr. C. Roche broke club record for paper gliders (53 ft. 11 ins.) with glide of 54 ft. 9 ins. This subsequently beaten by Mr. L. Roche with glide of 56 ft.

East Ham and District (54, SAVAGE GARDENS, EAST HAM).

AT New Beckton, week-end, C. Sharp (33-in. A frame) obtained 30 to 43 secs. (a club record) and 500 yards. Meeting to-day, Saturday, at New Beckton.

48th Glasgow Boy Scouts (285, RUTHERGLEN ROAD, GLASGOW).

AT annual rally and display of division model aero section gave demonstration of model flying. Owing to cramped ground vertical rudders used, allowing full flight in circles. Chief flyers, leaders, J. Brown and W. Clanachan; second, D. Watt, and Scoutmaster J. S. Gordon. The troop has now two aviator's badge men, and others will soon be ready to pass the badge exam.

Hackney and District (THE HOLLIES, JENNER ROAD, N.).

SATURDAY, violent wind, Mr. Louch broke club distance record with 800 yards (3-oz. 1-1-0 P2 model).

Lewes and District (41, NEW ROAD, LEWES).

This club has now been formed in this district. All persons interested apply to secretary. A workshop has been acquired, fitted with benches, tools, electric light, and a good number of models are being made. A competition will shortly be arranged.

Paddington and Districts (77, SWINDERLY ROAD, WEMBLEY).

SATURDAY Mr. Weston flying rise-off-ground model well despite boisterous wind, causing several smashes including Mr. M. Levy's 4-ft. single propeller machine. Messrs. Woolley, Carter, C. Levy, Cannell, Lane, Chalfont, and W. Evans also flying. Owing to the great interest taken by members another demonstration by the secretary in making curved propellers at workshop shortly.

Reigate, Redhill and District (4, LONDON ROAD, REIGATE).

CROYDON CLUB visited Earlswood flying ground Saturday. Six members home club turned out, including J. W. Burghope, who has joined the club. His scale Nieuport flew well in a strong wind. A. Lewis, of Reigate Club, did good flights with his "Almono."

Scottish Ae.S. Model Aero Club (6, McLELLAN STREET, GOVAN).

MONTHLY competition, distance and duration, at Paisley Racecourse. Results: Duration—Mr. W. G. Langlands, 51 secs.; Mr. James Donaldson, 39½ secs.; Mr. J. C. Balden, 39 secs.; Mr. C. F. Arthur, 32½ secs. Distance—Mr. J. C. Balden, 1,497 ft.; Mr. Jas. Donaldson, 798 ft.; Mr. C. F. Arthur, 506 ft. To-day (Saturday), hydro-aero meeting, Whiteinch Park. June 29th, distance and duration competition, Paisley Racecourse.

Sheffield Model Aero Club (35, PENRHYN ROAD, SHEFFIELD).

ON June 6th Mr. A. V. Kavanagh—in absence of Mr. E. W. Colver, through illness—presented prizes to Whit-Monday winners. The Colver Cup for self-rising models not being won, Mr. Colver awarded the silver medal as a consolation prize to G. H. Dewsnap, with 119 ft. The silver medal presented by Mr. Broomhead, for best constructed model aeroplane on view went to C. F. Cudworth, with his ½ scale Blériot. Duration event, G. Askew, 22 secs., bronze medal; H. Slack, 21 secs., ivory pocket knife presented by Mr. W. Blake; J. P. Worrall, 14½ secs., one pair 7-in. carved propellers, presented by Mr. H. Slack. Mr. W. Blake, on behalf of members, presented the secretary, Mr. C. F. W. Cudworth, with a shaving outfit, in recognition of his work for the club. Competitors for June 22nd are requested to be at Eccleshall Car Terminus at 2.45 prompt.

Stony Stratford and District Aero Club (OLD STRATFORD).

MEMBERS' meeting, clubroom, June 13th. Mr. Wainwright's resignation as chairman was accepted and Mr. Moore elected to fill vacancy. Mr. Watson resigned owing to leaving district. Members should obtain amended competition rules and particulars of monthly competitions. Club records: notice must be given of attempts in order to arrange for observers.

Worcester Model Aero Club (VICTORIA INSTITUTE, WORCESTER).

MR. S. A. SEARS, the secretary, has reluctantly resigned as he is leaving Worcester; Mr. E. W. Harrison has been elected to succeed him. In future an attempt will be made to support the scientific side of model work; to further this end no prize will be offered in any competition for a purely distance event. First competition under new arrangement for steering, on July 3rd. Prize to member whose model lands nearest a given mark 70 yards from the starting place. The prize will be withdrawn if no machine lands within ten yards of the mark. Special competition for rise-from-the-ground models in August.

CORRESPONDENCE.

Airships.

[1580] If K.A.H. will write to the Meteorological Office he can obtain information as to the average strength and direction of the wind for every month of the year. If he will then take the performance of which 23 is capable, a simple calculation will show him how absurd is his estimate of the number of days in the year she could reach our coasts. On what does he base his statement that an airship would not drop large quantities of explosives? They often drop large quantities of ballast.

Perhaps he means that the shock of the explosion would destroy the airship; but if the charge is dropped in water a delay action fuze is easily arranged for, and it does not seem impossible to do so if dropped on land. In any case the return of the airship, though desirable, is not of the greatest importance if she achieves her object.

Again I would point out that airships can climb as rapidly as aeroplanes. Mounting machine guns on the top of rigids is easy, and I believe the French have found it possible to fire from the top of non-rigids, though I presume a shoulder gun of sorts is used in this case. Finally I cannot agree with K.A.H. that aeroplanes can be used in rougher weather than airships, or that these two types of aircraft are "rivals" in the sense he uses it—both are necessary.

PER MARE PER AERO.

[1581] Re the letter of "Per Mare per Aero" (1570), has K.A.H. (letter 1579) caught the point of the first writer? As I read it, it conveyed quite a different impression. It seems to me that your original correspondent made a very strong point, and that the question of whether aeroplanes can attack a dirigible successfully is not the main subject at issue. Granting that the armed aeroplane will appear, granting that it will destroy the dirigible, if it finds it: suppose it doesn't find it?

"Per Mare per Aero's" sea analogy was extremely apt. We know that ships on the water are hard to find—therefore air finding at night must be infinitely more difficult.

There is another point which K.A.H. overlooks. It is a platitude that if you have eleven destroyers sunk and the twelfth one bags a big ship, the loss of the eleven matters nothing.

Just the same would obtain with dirigibles; only the prize of destroying or partially destroying a dockyard would be infinitely greater. The chance of "return" would never enter into the calculations of any attacker. Naval men, I can assure him, are not to be deterred by risks of not returning.

It always seems to me that we have allowed the idea of the dirigible as "the battleship of the air" and the aeroplane as "the torpedo boat of the sky" to obsess us unduly. Would not a military analogy get nearer the mark. In the old days—perhaps still—the infantry text-book used to state that infantry were invincible against cavalry. The cavalry book on the other hand announced the exact contrary! So both were taught to develop along their best lines. Isn't the dirigible v. aeroplane argument something like the foot-soldier and the cavalry-man discussing their respective merits? If it isn't—it ought to be!

In any case there are certain obvious naval uses to which dirigibles and only dirigibles can be put, and anyone who knows anything about naval men knows that they'll find some way of minimising vulnerability, just as they did with wooden ships when shells were introduced.

Again, how many people in the country realise the gulf between the latest type Zeppelin and our "Gamma"? How long before dirigibles will grow bigger and carry aeroplanes to use against aeroplanes which attack them? The idea has been mooted, and though it may not sound very probable to-day, there is no harm in remembering that a little over fifty years ago it was demonstrated that armour-clads could not float!

Seeing the way in which the Germans are developing dirigibles, isn't it dangerous to assume that dirigibles have no war future. Our first duty, surely, is to be prepared for any possibility, leaving theories of probabilities severely alone.

I must say that "Per Mare per Aero's" letter struck me as most sensible and timely. "K.A.H.," to my mind, wants us to trust to theoretical probabilities. That, in war, has ever paved the road to disaster.

FRED T. JANE.

Accidents and the Joys of Flying in America.

[1582] Knowing that you will receive only misleading reports from the press of the killing of three people and the injury of twenty others by aviator Turpin's aeroplane, and believing that you can use the facts to advantage in preventing like possibilities in England, I shall state the facts as related at the inquest where I was a witness this morning.

The flights took place at the Meadows, a local race track, and the

centre of the track was so bad that only the track itself could be used. Only a small portion of the fence on one side of the track had been removed and the people were on both sides of the track; the police, about 20 in number, were both unable and unwilling to keep the people clear of the machines, and on the day before the accident the crowd was very impatient that the aviators should delay even a few moments to fix the aeroplane. The crowd acted as though they had no use of their reasoning powers but desired to be amused at whatever cost. They had paid their two shillings and they demanded flights immediately regardless of whether the aeroplanes needed a few minutes' attention or not. One man attempted to cut the wires on Parmelee's aeroplane, because after making a fine flight he delayed ten minutes to adjust his motor.

Although there were but 9 ft. to spare on either side of Turpin's machine the aeroplane could have cleared everything had not an idiotic photographer run directly across the track in front of the rising aeroplane, which is a tractor biplane with a 60 h.p. Hall-Scott motor. Turpin could not lift the whole machine quickly enough to clear the man and so he saved his life by a catlike movement of the ailerons which lifted one wing so that it just took the hat off the man. At the same instant the left and lower wing caught on an iron pipe along the fence and acted as a pivot, swinging the aeroplane directly over the crowd and head-on for the grand stand. Again Turpin showed extraordinary ability, and kept his engine on and tried to get clear of the grand stand and above the surging mass of humanity just under him. He failed to get clear of the grand stand, and struck it about 10 ft. above the ground and about 4 ft. below the first row of boxes. The machine then fell on to the crowd below, and as a result one man and a boy have died and a woman is not expected to live. Many others were injured, and Turpin was cut about the face, but otherwise escaped injury, which shows that in this case the tractor type of biplane saved the aviator.

It is not altogether easy to place the blame in such accidents as this, and your readers may have different views from my own, but I place little or no blame on the aviators, for they were doing the best they could. Did they know it was dangerous? Yes. Then why did they fly? Because they have to make a living, and this is their profession. But why did not they insist on the management giving them a suitable place to fly? Because to do so would have prevented even what little chance they had of making enough money to meet their very heavy expenses. I believe that this and very many other aeroplane accidents are due entirely to the lack of enterprise which in the U.S. and England refuses to provide funds for proper aeroplane equipment and grounds. Such accidents are not excusable, because a little extra money would prevent them. In the above case, two hundred dollars spent on the preparation of the inner field would have provided a good place to fly, and enabled the crowds to see without danger.

Just as I am writing I receive the sad news of Parmelee's death, which proves that the tractor aeroplane is also capable of killing its man.

I hope that the above will assist you in estimating the causes of accidents.

Seattle, Washington, May 31st.

JAS. V. MARTIN.

Aviation Insurance.

[1583] We have noticed several letters in reference to aviation insurance in recent numbers of FLIGHT.

Most of your correspondents complain of excessive premiums and lack of insurance facilities, and suggest that statistics should be collected and sent to insurance companies in order to get them to accept aviation risks more freely and at lower rates. We should like to point out that we have now been effecting aviation insurance at Lloyd's for some years, and we are able to issue policies for every kind of aviation risk, from damage to machines to personal injury to aviators, including weekly disablement benefits. We do not find that our rates are considered unreasonable by aviators. It is obvious that, at this stage of the development of aviation, insurance business cannot be carried on with the same small margin for working expenses and profit as will be possible in a few years' time, when there will be thousands of risks on which to arrange terms.

Perhaps we may add that we have been in close touch with schools and private aviators, and have collected very valuable statistics of accidents and damage. It is thanks to these statistics that we can issue policies covering damage to the machines, and the rates of premium are not out of proportion to the risk indicated by our figures.

BRAY, GIBB, AND CO., LTD.

166, Piccadilly. E. R. ADAMS, Manager, West-End Branch.

THE Geographia Designing and Publishing Co., Ltd., inform us that the working agreement between them and Mr. Clift has been cancelled by mutual consent. In the future their aviation maps will, as heretofore, be prepared by Mr. Alexander Gross.

AERONAUTICAL SOCIETY OF GREAT BRITAIN.

Official Notices.

Election of Associate Fellows.—As a result of the ballot for Associate Fellowship the following have been duly elected Associate Fellows of the Aeronautical Society:—Dr. F. A. Barton, A. E. Berriman, Robert Blackburn, Harris Booth, F. H. Bramwell, Capt. H. R. M. Brooke-Popham, Capt. C. J. Burke, Col. J. E. Capper, C.B., R.E., Prof. Herbert Chatley, Bertram G. Cooper, Horace Darwin, F.R.S., Harry Ferguson, Edward P. Frost, Col. J. D. Fullerton, R.E., B. Melvill Jones, H. F. Lloyd, Capt. E. M. Maitland, P. K. McClean, G. F. Mort, A. F. Thurston, W. R. Turnbull, W. Ellis Williams and Howard T. Wright.

T. O'B. HUBBARD, Secretary.



PUBLICATIONS RECEIVED.

Luftschrauben. By Paul Bejeuhr. Frankfurt: F. B. Aufarth. Price, 4 marks.

Bau und Betrieb von Prall-Luftschiffen. Part I. By Richard Basenach. Frankfurt: F. B. Suu Aufarth. Price, 3 marks.



NEW COMPANIES REGISTERED.

Motor and Aviation Co., Ltd., 62, St. Martin's Lane, W.C. —Capital £100, in £1 shares.

White and Thompson, Ltd., Aeronautic Works, Middleton, Bognor.—Capital £20,000 in £1 shares. Acquiring the business of aeroplane constructors and aviation experts carried on at Middleton, Bognor, as White and Thompson.



IMPORTS AND EXPORTS, 1911-12.

AEROPLANES, airships, balloons and parts thereof (not shown separately before 1910):—

	Imports.		Exports.		Re-Exportation.	
	1911.	1912.	1911.	1912.	1911.	1912.
	£	£	£	£	£	£
January ...	1,196	619	1,088	2,412	Nil	Nil
February ...	3,129	3,110	1,786	36	Nil	Nil
March ...	11,327	640	1,027	950	357	600
April ...	2,110	4,820	807	72	4,343	50
May ...	1,707	7,494	2,471	1,350	1,972	154
5 months	19,469	16,683	7,179	4,820	6,672	804

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